AMATEUR RADIO

VOL.52, NO.7, JULY 1984

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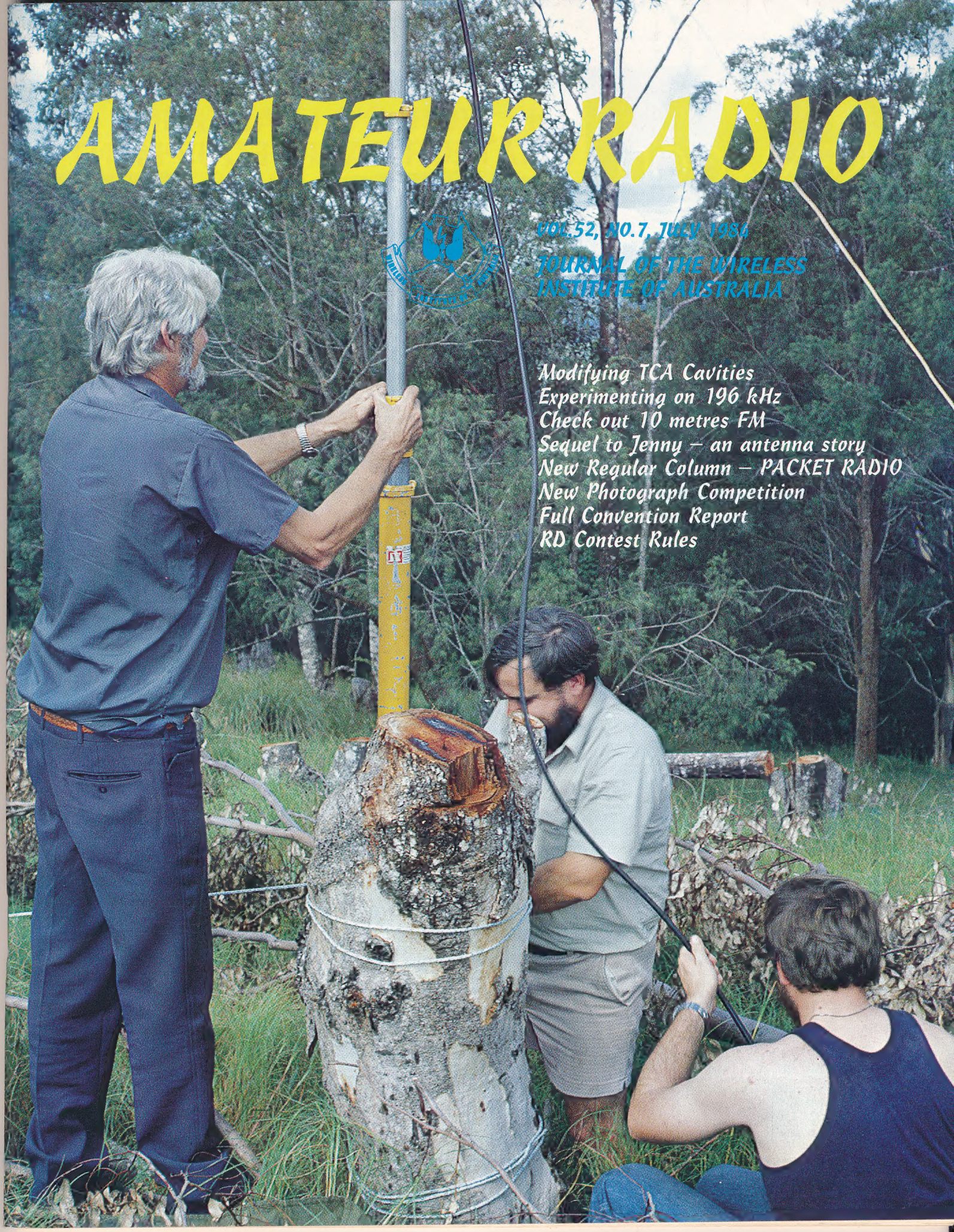

Modifying TCA Cavities
Experimenting on 196 kHz
Check out 10 metres FM
Sequel to Jenny – an antenna story
New Regular Column – PACKET RADIO
New Photograph Competition
Full Convention Report
RD Contest Rules

KENWOOD

THE WORLD'S LEADER IN AMATEUR RADIO EQUIPMENT

TR-7950 2M FM TRANSCEIVER
Big Power – 50 Watts – Big Features

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TR-9130 2M ALL-MODE TRANSCEIVER

TS-830S HF TRANSCEIVER

TS-93X Mark II. HF TRANSCEIVER
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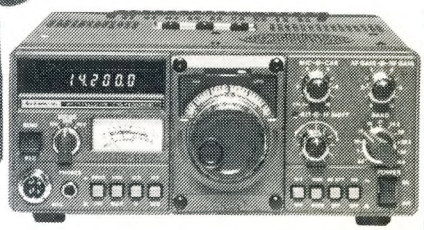

TR-130SE HF TRANSCEIVER
Mobile or fixed operation – 100 Watts.

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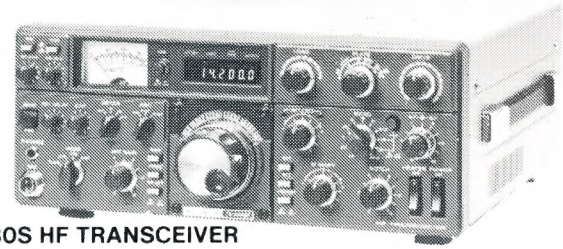
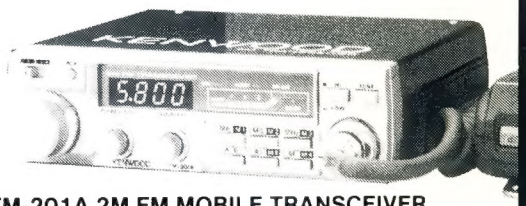


TS-530S HF TRANSCEIVER
With notch filter and built-in AC Power Supply.



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TM-401A 70 CM FM MOBILE TRANSCEIVER

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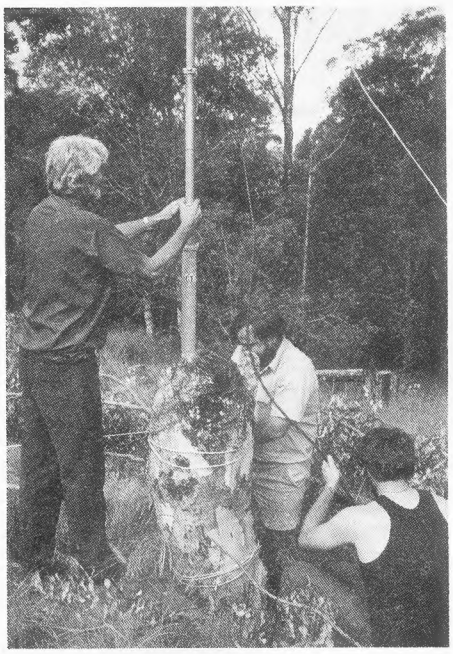

John VK4ZDV, Aaron VK4AHO and Grant VK4KJR/P29KJR erect a pneumatic mast on loan from the State Emergency Services for the second WICEN repeater antenna. (See page 14 for cover story.)

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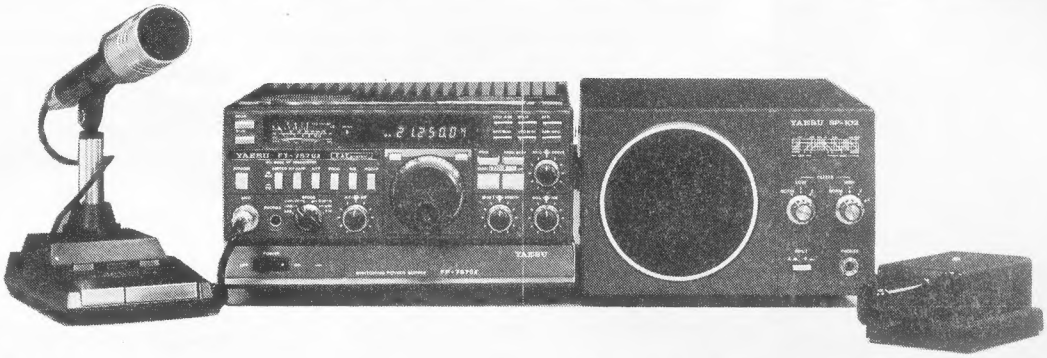
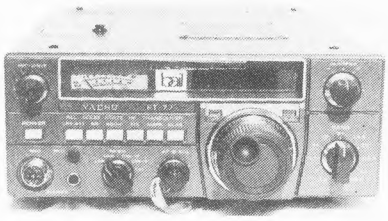


HF Transceivers

FT980 – all mode; 12 memories; general coverage Rx.
FT757GX – all mode; 8 mems; all normal options installed; gen coverage Rx.
FT102 – three 6146B's PA; optional AM/FM unit.
FT77 – 100W mobile.



VHF/UHF Transceivers

FT726R – all mode; 10 memories; 10W output; two VFO; can hold three modules (2m, 6m, 70cm, 21/28m modules) plus satellite IF unit; AC/DC operation.
FT480R – all mode 2m; 10W.
FT208R – handheld 2m; 2.5W; keypad entry.
FT203R – handheld 2m; 2.5W; thumbwheel; optional headset/mic and VOX operation.
FT290R – all mode portable 2m; 2.5W.
FT230R – mobile 2m FM; 25W; 10 memories
FT690R – all mode portable 6m.
FT790R – all mode portable 70cm; 1W.
FT708R – handheld 70cm; 1W; keypad entry.
FT730R – mobile 70cm; 10W; 10 memories.

Linear Amplifiers

FL2100Z – 160m-10m; 1200W max input.
FL2050 – SSB/FM 2m; 70W out for 12W in; 12dB receiver amp.
FL2010 – 2m; 10W out; suits FT208, FT290, etc.
FL6010 – 6m; 10W out; suits FT690.
FL7010 – 70cm; 10W out; suits FT708, FT790, etc.
FL110 – suits FT7, etc.

Antenna Tuning Units

FC700 – suits FT707/77; inbuilt 150W dummy load.
FC757AT – automatic; suits FT757/FT980; inbuilt 150W dummy load.
FC102 – handles up to 1.2 kW.
FAS-1-4R antenna selector (4-way).

External VFO

FV700DM – suits FT77/707; 12 memories.
FV107 – suits FT107M.
FV102DM – for FT102.

Transverters

FTV901R – suits FT901/902, FT101Z.
FTV707 – suits FT707/77 (takes one module).
– 6m, 2m, 70cm modules for above.

Power Supplies

FP700 – suits FT77, FT757.
FP575GX – switch mode.
FP757HD – heavy duty.
FP7 – 3 amp.
FP107 – internal power unit for FT107M.
FNB-2 – NiCad pack for handhelds.

Chargers and DC/DC adapters

NC-8; NC-3A; PA-2; PA-3; etc.

External Speakers

SP107 – suits FT107.
SP102 – suits FT102, FT726, FT757GX; has filters.
SP980 – suits FT980; has filters.
SP55 – general purpose.

Also we have range of Commercial *handhelds and mobiles aproved by DOC. Low and high band VHF, VHF Marine handheld, UHF handhelds and mobiles.*

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AM/FM units; keyer units; WARC band mod kits for FT101Z, FT107, FT901; FIF-232C (RS232 interface); extender boards; mobile brackets, etc.

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MD-1B8 – desk type with scanning.
MH-1B8 – hand mic. with scanning.
YM38 – desk mic. with scanning; dual impedance.
YE-7A – hand mic.; 4-pin; 600 ohm.
YD846 – hand mic.; 50 kohm.
YM36 – hand mic.; noise cancelling.
YM40 – for FT480, 680, 780.
YM47 – for FT290, 690, 790, 230, 730.
YM49 – speaker/mic. for FT290, 690, 790.
YM24A – speaker mic for handhelds.
– 4-pin, 6-pin, 7 & 8-pin plus and sockets for above.
– 8 conductor curly mic. cords.
YH-1 – headset/boom mic. for handhelds and mobiles.
– SB-1, SB-2, SB-3 switches.

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Morse Keys

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YH-77 – lightweight.

Receiver

FRG7700 communications receiver, all mode.
FRV7700 VHF converters; FRT7700 antenna tuner; FRA7700 active antenna; memory unit.

Ham Clock

Yaesu QTR24D – quartz, shows time zones.

Filters

CW, CW (narrow), AM, SSB (narrow) for HF and FT726R transceivers.
Filter FF501DX (30 MHz LP).

Service Manuals

for most transceivers and FRG7700.

Vacuum Tubes

572B, 6JS6C, 6146B, 6KD6, 6JM6, 6GK6, 12BY7-A.

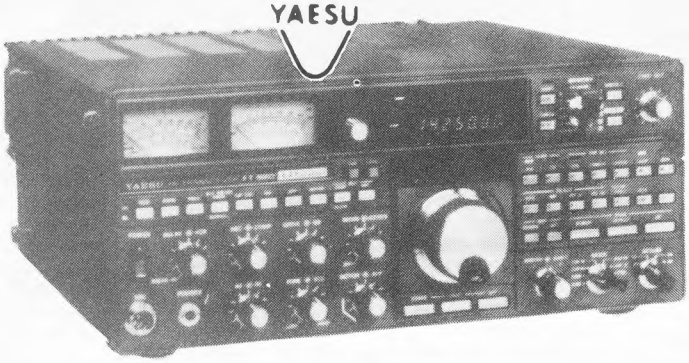
Oscarblock

power/SWR dual meter – up to 150MHz.
T435N fwd/ref power dual meter – 146 and 435MHz; 'N' connectors.

Antennas

Hidaka VS33 triband; VS73SR UHF 7.8dB mobile; VS73GH 70cm gnd plane; VS27GR 144/435MHz mobile; LB607 6m log beam. Yaesu RSL series for HF mobile; RSL145 2m 5/8W mobile; RSL145 2m gnd plane; RSL 435 70cm colinear; spare antennas for FT290/690; YHA-44D halfwave antenna for 70cm handhelds.

YAESU



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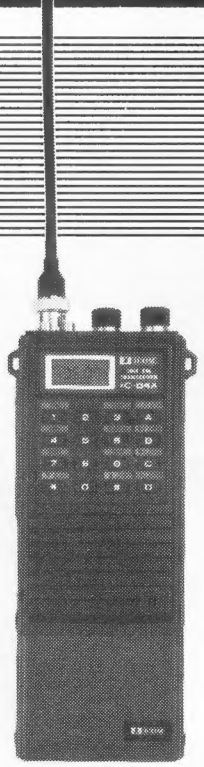

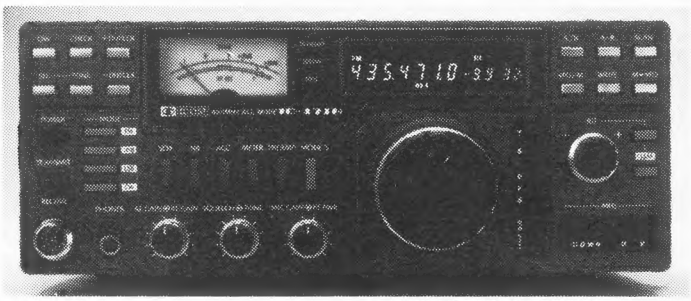

1. IC-120
1.2 GHz mobile compact unit with 6 memory channels plus 2 VFO's, memory and frequency scanning, duplex facility, even RIT, plus green LED readout. 1 Watt output. Optional ML-12 power booster and PS-45 power supply units are shown.

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7. *OUR BEST SELLER!* IC-745
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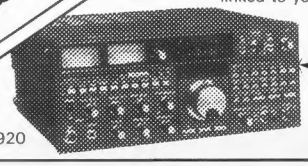

Cat D-2920

$1995

★ **BONUS!** MD1B8 Desk mic Save $99 Cat C-1114

Go-anywhere UHF

FT 708 H/Held

10 memories, standard repeater splits and 1W output on 70cm: that's the FT708. Memory or band scanning, complete with Ni Cad battery and charger.

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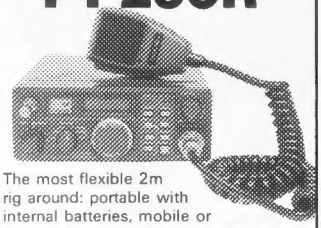

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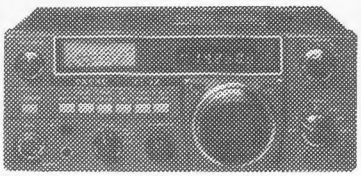

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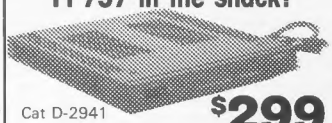

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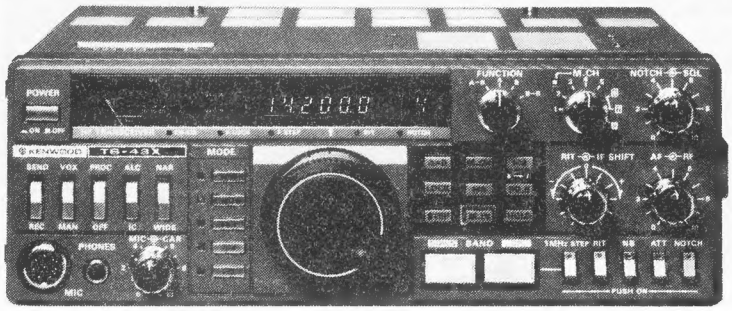

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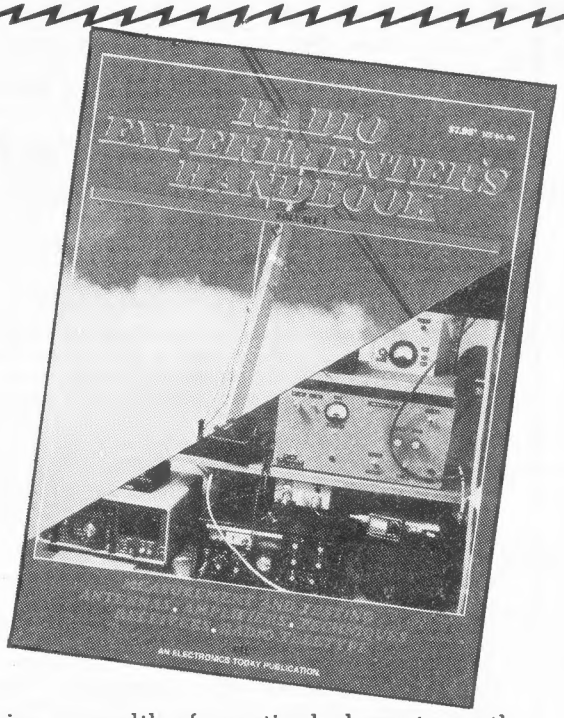

eti

Edited by Roger Harrison, VK2ZTB, this book carries a wealth of practical, down-to-earth information useful to anyone interested in the art and science of radio. $7.95 from your newsagent or through selected electronics suppliers. It is also available by mail order through **ETI Book Sales, P.O. Box 227, Waterloo NSW 2017** (please add $1.75 post and handling when ordering by mail).

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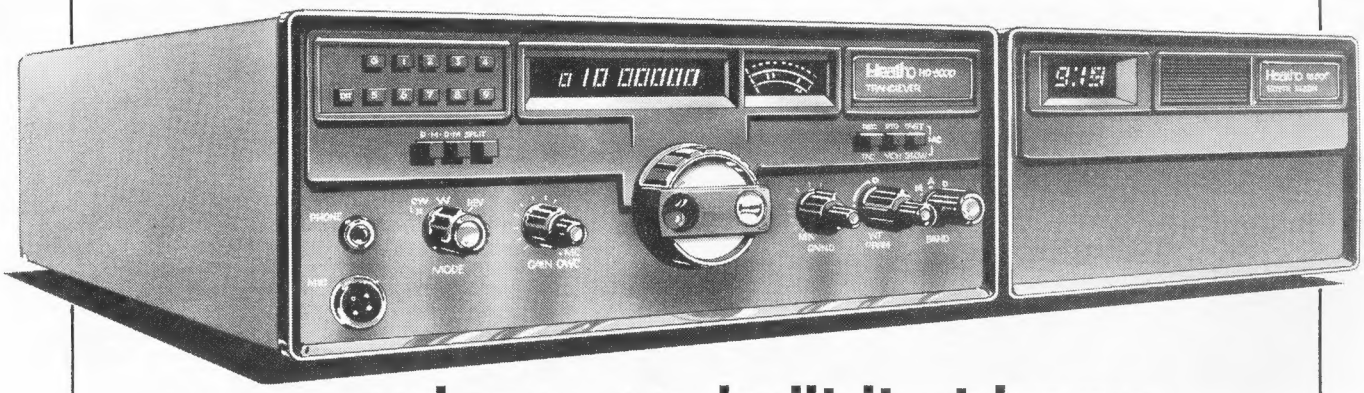

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a word from your EDITOR

NEW FACES

At the Federal Convention at the end of April, Gil Sones, VK3AUI transferred to me the editorial chair which he had occupied since February 1983. I would like to record for all of us our thanks to Gil for his very competent management of AR during this time, and to express our hopes that the illness which has forced him to "take it easy" will soon permit him to return to all his normal activities. Already, I'm sure he's appreciating the extra time he can spend on six metres!

Elsewhere in this issue is an account of the 1984 Federal Convention, which has resulted in a number of changes to our organisation. There are some new faces on Executive, and our "elder statesman" David Wardlaw, VK3ADW is again President. For the first time Executive is not now composed entirely of VK3s. We welcome Ron Henderson, VK1RH to the group of ten who, monthly or more often, meet to conduct the affairs of the WIA in accordance with the policies established at the Convention. Since all Divisions have a hand in this policy-making via their Federal Councillors, it would be ideal if all Divisions could also participate fully in its implementation, but so far this has been a logistic impossibility. VK1RH may represent the dawn of a new era.

Is it too much to visualise the Executive meetings of 1994 taking place with members from all Divisions appearing from their own homes by satellite-relayed TV, all amateur hardware of course, in three-dimensional colour? Computerised data links providing hard copy of all paperwork to all concerned? Perhaps not in 1994, but we, as amateur communicators of many specialities, ought to be able, better than most Australia-wide organisations, to overcome the problems imposed by geography.

And the future of "Amateur Radio"? For fifty two years this magazine has been the most tangible example of the bonds which unite us as members of the WIA. I would hope that in another fifty two years it will still play just as large a part, and be a journal of which our successors can be just as proud, whether by then paper and ink be obsolete or not. If you, the members, continue to support us with articles, columns, letters and photographs as you have during my twelve years of technical editing, then our future will be assured.

Bill Rice, VK3ABP
Editor

TRY THIS

A SIMPLE DUMMY LOAD

John A Taylor, VK3AJT
Kallista, 45 The Esplanade,
Drumconda, Geelong, Vic 3215

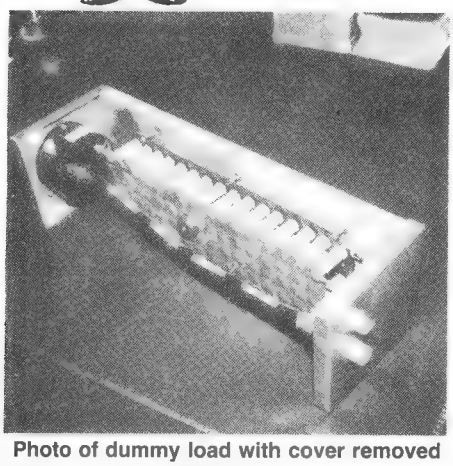
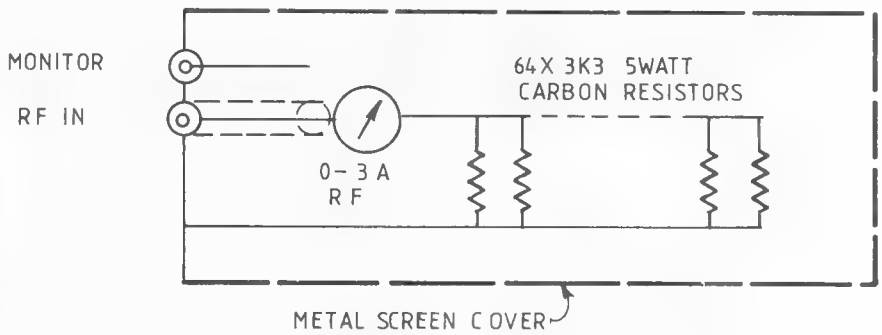


Photo of dummy load with cover removed



Circuit Diagram of 52 ohm Dummy Load. Use 66 resistors for 50 ohms.

Recently, at the QTH of one of my amateur mates, I had occasion to use his very heavy and expensive dummy load. It occurred to me that others might be interested in the dummy load I constructed some twenty five years ago. So far it has taken everything I have thrown at it.

It consists of sixty four 5 watt carbon resistors connected in parallel between two 16 gauge copper plates. The photograph shows the unit with its metal mesh cover removed. One of the copper plates is bolted to a length of dressed ¾" timber which becomes a side. This allows cooling air to convect vertically through the horizontal resistors. The end panels could be bent up from sheet aluminium. A "UHF" type coaxial connector is fitted to the rear panel to accept power from the transmitter. A piece of RG8 coaxial cable carries the RF to the front where the centre conductor connects to a 0-3 A RF ammeter. The earth connection is soldered to the copper plate mounted on the wood and the other plate connects to the RF ammeter. This is shown in the circuit diagram.

The white lead is an open-ended length of hookup wire taped to the coax to give a sample of the signal for analysis if needed. Connection is via a TV type coaxial socket.

The impedance is very close to 52 ohms resistive and the application of up to 500 watts for brief periods has done no harm.

(It is assumed that the dummy load is equipped with four feet to provide sufficient clearance for air to flow freely into the bottom of the load . . . Ed)

EXPERIMENTAL STATIONS ON 196 kHz 1531 METRES

John Adcock, VK3ACA
12 Albert Street, Oak Park, Vic 3046

The salient points of a lecture given on the subject "Amateur Radio and Low Frequencies" at the WIA Victorian Division meeting in November were presented by Jim Linton in January Amateur Radio. I propose here to present some details of the experiments so that they are recorded for posterity.

I do not intend to push the idea of amateurs on long waves. I think some amateurs will be motivated with considerable interest in the subject while others will barely give it a passing thought. It happens to be a subject I have had some interest in. Also I have always been of the opinion that amateur radio should have a representative part of the whole radio spectrum.

Some people have asked me. *"Why bother transmitting on these frequencies when you can listen for non directional beacons on nearby frequencies to observe propagation conditions?"*. The reason is the same as why we operate amateur radio. There is nothing like first hand experience. Not only that, it is difficult to get a clear idea of things from beacons because there are many operating on the same frequency.

Operating on long wave is certainly not new. Trans Atlantic transmissions were carried out on long wave before the discovery of long distance propagation on short wave. Long waves are still used for world wide radio communications. There are broadcast stations in Europe and Asia between 150 and 350 kHz and these are audible in Australia from time to time.

Early amateurs used long waves but probably not since 1910, except by accident. There has been a very long standing agreement by authorities that amateurs can only use "wavelengths shorter than 200 metres" (frequencies above 1500 kHz). This was stated even on pre "First World War" licences and is also referred to in the ARRL Handbook. To me, the broadcast band has appeared as a barrier which must never be crossed. I won't say that the grass is greener on the other side but it is certainly interesting.

HOW IT CAME ABOUT

For some time past, the Americans have had the use of a citizens allocation of frequencies (no licence required) between 160 and 190 kHz. According to "CQ Magazine" the band was allocated for the purpose of opening garage doors. The power allowed in this band was very limited. Prior to WARC 79 there were several proposals for an LF band from America and several other places. Unfortunately for many and varied reasons these proposals were withdrawn prior to the WARC conference.

Originally the WIA were prepared to support the ARRL with their proposals and the matter was discussed with the department. I learned from members of the committee that, since the American withdrawal, the proposal was now in abeyance but the department may consider applications for an experimental licence.

What is an experimental licence? The department have always issued experimental licences for specific purposes. There are no specific rules about obtaining one. To obtain an experimental licence you have to write to the department stating what you intend to do, why you intend to do it, what equipment you intend to use and your qualifications. Having heard of this possibility I determined to follow the matter up.

The proposal that I put to the department was I would like an experimental licence to operate on a low frequency in the region of 1.60 to 200 kHz, CW telegraphy only, using amateur radio type equipment only and a backyard antenna. I would communicate with one other person with similar interest. The other person interested was Peter Forbes VK3QI and we both sent in our applications together.

In preparing the application it was considered necessary to make a reasonable proposal which had a chance of being accepted. For example CW occupies a minimum of spectrum space in a band with very little spectrum.

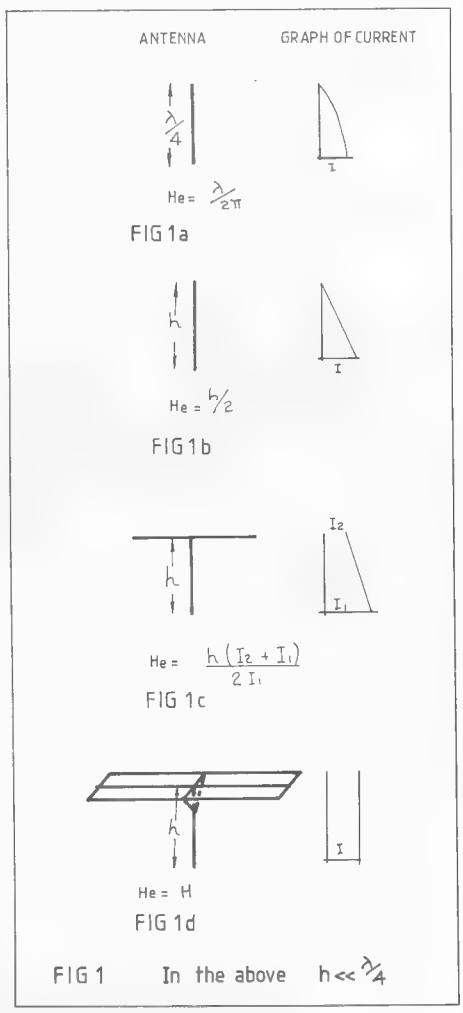
The proposal was eventually agreed to and licences granted. The frequency allocated was 196 kHz for CW telegraphy with a frequency stability of +/- 200 PPM and a channel width of 100 Hz. The callsigns were AX3T35 to J Adcock and AX3T36 to P Forbes. The licences were dated from 17th March, 1981. The frequency stability requirement is relatively easy to achieve; the channel width requirement meant that key clicks had to be eliminated. Ask any old timer how they went about building a key click filter.

In the following paragraphs I intend to give an outline of technical requirements on LF and how we achieved these requirements. As regards LF propagation I find this is not covered at all in amateur radio texts. One of the most widespread misconceptions is that LF propagation is by groundwave only. Not so! Low frequencies are reflected by the ionosphere in a completely different manner to that on HF. The propagation improves below about 300 kHz and peaks about 12 kHz. I propose to detail LF propagation characteristics in a later article.

THE ANTENNA

The polarisation of a low frequency signal at ground level is effectively vertical. This statement will be qualified later. The height of any practical low frequency antenna must of necessity be small as compared with a resonant length. The antenna must be vertically polarised and should be physically as large as practical limits will allow. In fact an LF antenna cannot be too large! They have very large top loads, usually much larger than the vertical section and have some form of elaborate ground system. The following is a brief theory as applied to low frequency antennas.

All antennas can be considered to consist of two parts. The ends of the antenna mainly carry voltage and originate the electric or "e" field; the centre of the antenna mainly carries current and originates the magnetic field or "h" field. Because of the relative smallness of an LF antenna it is advantageous to concentrate the current in the veritcal section of the antenna and concentrate the voltage at the



top load. In antenna theory it is usual to base all calculations on the current part of the antenna only, but one must not lose sight of the fact that the "electro magnetic field" consists of two fields originating from the two parts of the antenna.

Fig 1a shows the graph of current distribution on a quarter wave vertical which is in fact of sinusoidal form. The current distribution on a much shorter antenna will be represented by only a short section of the quarter wave antenna and since the graph of current distribution is only a small section of a sine wave it can be regarded as a straight line. There are three main examples of current distribution on such an antenna. A vertical with no top load is shown in fig 1b, a vertical with a relatively small top load fig 1c and a vertical with a large top load fig 1d. A current distribution of the form shown in fig 1d is the one to aim at. For more detail on this subject refer to an earlier article by the author ref 1.

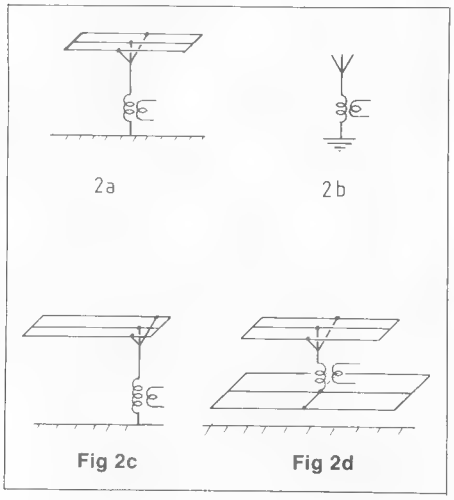
In the following discussion it can be assumed that the word "antenna" refers to an antenna which is very short as compared with a quarter wave such as used at LF. The power radiated from an antenna is proportional to both the square of the current and the square of the effective height (ie the effective length of the current carrying element). It is therefore obvious that both these quantities must be as large as possible. The components of a short antenna when measured on an impedance bridge in series with the ground are capacitive and resistive. The equivalent circuit is usually considered as a series circuit. The series resistance part of the circuit is made up of two parts, loss resistance and the component due to radiation usually called "radiation resistance". The radiation resistance of an antenna is given by the formula —

$$Rr = \frac{1580\ He^2}{\lambda^2}$$

where He = effective height and λ = wave length, both in the same units. The effective height is given in fig 1 in each case. The power radiated from the antenna is given by —

$$Pr = I^2Rr$$

To illustrate the significance of these formulae we will look at their practical application in the next section.



The most common concept of an LF antenna are shown in fig 2a. In fact this antenna is the one from which the antenna symbol came fig 2b. It makes use of a large top load. The load must be large to have a large capacitance while still having a good height above the ground. The antenna fig 2a is classically known as the "Tee"; another arrangement shown in fig 2c is known as the "inverted L". The antenna, which is mainly capacitive, is tuned by means of a series loading coil coupled to the transmitter. It cannot be emphasised too often that such an antenna is very inefficient. The radiation resistance is very low, the capacitive and inductive reactances are high, the coil loss resistance is high and the ground resistance is high. The ground resistance can be reduced by using buried radials or by using a counterpoise as in fig 2d. There are a most bewildering variety of designs of top load, earth system and counterpoises and it is not intended to discuss their details here. The reader should refer to the many texts on the subject.

THE ACTUAL ANTENNA

In this section it is proposed to detail the antenna that is used by AX3T35 in Oak Park and particularly illustrate the difficulty in obtaining even a moderate efficiency.

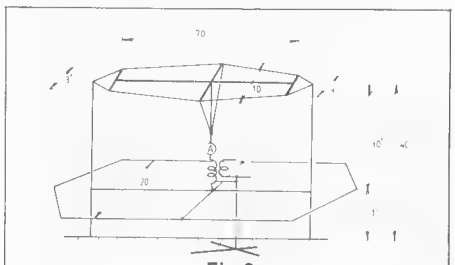
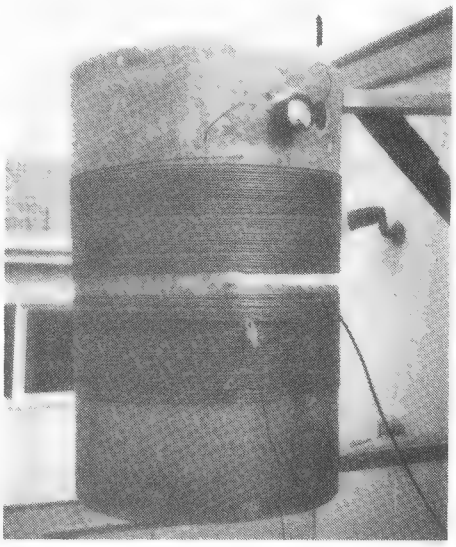


Fig 3



The construction of the antenna is shown in fig 3. Several variations of the antenna were tried but for simplicity we will consider only the one shown. The loading coil (in long wave stations is called the helix) is shown in the photograph fig 4. It consists of seventy turns of 10 B&S enamelled wire wound on a fibreglass former 0.5 m (20") diameter. Before winding such a coil I suggest you make sure you can borrow a large lathe. The former was made by laying fibreglass over the cardboard concrete form tube. The coil was broken in the centre with a three turn rotating link in variometer fashion for fine tuning. Coarse tuning was carried out by taps at the end of the coil.

The coax from the transmitter was coupled to the loading coil with a single turn link. In the final arrangement the earth was tapped onto the coil so as to combine the effect of the earth and counterpoise to best advantage.

To simplify calculations we will assume that the vertical section of the antenna is 30 ft long, carries the same current top to bottom and is not connected to ground. The measured capacitance of the top section was 333 pF and that of the counterpoise was 585 pF. From capacitors in series —

$1/C = 1/C1 + 1/C2$

$C = 213$ pF

This is effectively the capacitance loaded across the coil. The capacitive reactance at 196 kHz is —

$Xc = 1/2\pi fC$

$Xc = 3812$ ohms

To resonate the system the coil must have the same reactance. Therefore to obtain inductance of coil —

$L = X1/2\pi f$

$L = 3095\ \mu H$

From the formula for radiation resistance —

$Rr = 1580\ He/\lambda$

He = 30 ft or 9.1 metres

λ at 196 kHz = 1531 metres

$Rr = 0.056$ ohm

The measured Q of the coil was 400; actually a very good Q. The effective series resistance of such a coil is given by —

$R = X/Q$

$R = 3812/400$

$R = 7.96$ ohm

It is now obvious why it is so difficult to obtain a reasonable efficiency. If the loss resistance is 7.96 ohm and the radiation resistance is .056 ohm the efficiency can't be better than 0.70 percent. The coil resistance loss is not the only loss.

Consider the following, if the aerial circuit was 100 percent efficient with 100 watts to the circuit the aerial current would be —

$I =$

$I = 42$ amps

The voltage on the top load of the antenna with respect to ground is given by —

$Xc = 1/2\pi\ f0$ where $c = 333$

$Xc = 2438$

$V = XcxI$

$V = 2438x42$

$V = 102$ kV

Such current and voltage is enormous. The actual antenna current was 2.6 amps. The radiated power would be —

$W = I^2R$

$W = 2.6^2 \times .056$

$W = 0.38$ watt

Since the power to the antenna is 100 watts, the efficiency is 0.38 percent. The voltage on this antenna would be 6.3 kV.

Since the actual efficiency is .38 percent it is obvious the coil loss is not the only loss. Other losses are, resistance in the antenna and ground (if connected), induced losses in surrounding objects and leakage across insulators.

How do you reduce these colossal losses? Unfortunately there is only one way, by making the antenna bigger! For example the radiated power goes up in proportion to the

square of the effective height for the same antenna current. A wider longer topload has a higher capacitance, the coil will need less turns and therefore less resistance and more current. The radiated power is proportional to the square of the current. If the antenna was doubled in all dimensions the efficiency could be raised from .38 percent to six percent.

A USEFUL NOTE

Two items I found very useful in constructing the equipment described were a "Q" meter and a small coil winding machine. A "Q" meter can be used to measure resonate frequency, inductance and circuit loss. The "Q" meter used was a very old instrument by Advance. The coil winding machine was a small device available about ten years ago for $10. However it is quite adequate for all honeycomb coils.

THE TRANSMITTERS USED BY AX3T35 AND AX3T36

The transmitter used by AX3T35 was conventional. It consisted of a 6CL6 oscillator 5763 buffer and a pair of 6CD6GAs in parallel in the final. The oscillator buffer section was originally a Geloso 4/104 VFO. The only parts of the original VFO used was the chasis, the dial and the valve sockets; the rest was new.

The transmitter was originally VFO controlled but was later changed to crystal. The oscillator and buffer coils were home wound. The final tank circuit used an AT5 MF section variometer transmitter tank coil tuned by fixed mica capacitors. At LF variable inductor tuning is often simpler than variable capacitor tuning. The circuit of the transmitter tank section is shown in fig 5.

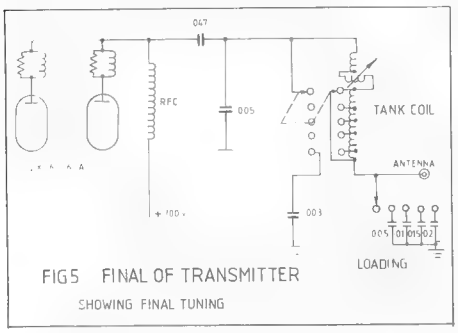


FIG5 FINAL OF TRANSMITTER
SHOWING FINAL TUNING

The transmitter used by AX3T36 was a transverter modelled around an FT101 and used a pair of 6JS6s in parallel in the final. Conversion was from 7 MHz.

When we talk about large inductances many think of ferrites, it is therefore advisable to make some reference to these. Peter Forbes successfully used some ferrites in his transverter. The constructor must always calculate the likely flux density in the core to ensure saturation is not reached. It should also be noted that on low frequencies the ferrite is likely to turn out larger than expected. I would advise anyone on this subject not to guess at the size of the ferrite or the number of turns but to refer to a reliable text. The largest inductor in the system is the antenna loading coil. It has a much higher "Reactive Volt Amp" rating than any other coil and its efficiency directly affects the overall loss. It is possible to wind a coil with a higher Q than a ferrite, it is therefore advisable that the loading coil should be air cored.

OSCILLATORS

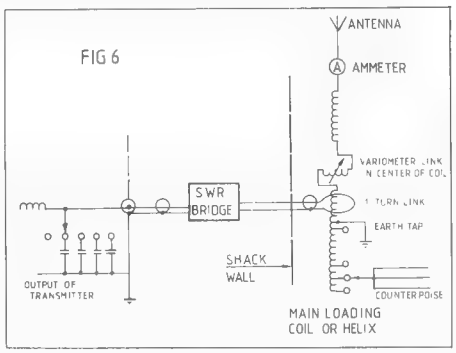
A Colpitts VFO was originally used by the author because it was not known what frequency would be allocated. Although it is possible to obtain good stability with a VFO at these frequencies it is always a nuisance because it is necessary to regularly check the frequency. One way round this problem would be to use a frequency counter. Since the author did not have such a device crystal control was a necessity.

A 196 kHz crystal was duly obtained. A 196 kHz crystal is usually a CD cut and oscillates in a width mode instead of the usual thickness mode. If you plug such a crystal into an HF crystal socket it will oscillate at a high frequency. To make the crystal oscillate in the correct mode it is necessary to use a correct series choke. A very good article on this subject was published by John Foster and Bob Rankin (ref 2).

Probably a cheaper and more modern approach would be to use an HF crystal followed by a frequency divider.

FEEDING THE ANTENNA

The output or loading capacitor of the pi tank circuit consisted of a set of fixed capacitors selected by a rotary switch fig 5. The output was connected to a link on the loading coil through a 50 ohm coax and an SWR bridge fig 6.



The SWR bridge is based on a design in the ARRL handbook but using a larger number of turns on the toroid and larger capacitors to suit the lower frequency. When tested on a 50 ohm dummy load the bridge worked satisfactorily from 196 kHz to 1875 kHz.

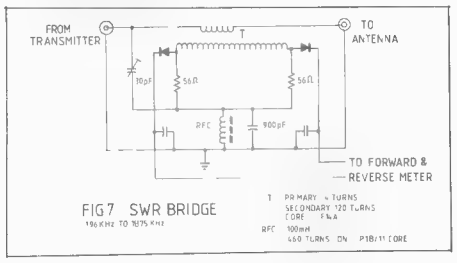


FIG7 SWR BRIDGE
196 KHz TO 1875 KHz

The loading coil was tuned to give maximum antenna current first by adjusting the taps and then fine tuning with the variometer coil. The earth was tapped just below the neutral point on the coil so that it was partially in parallel with the counterpoise. The maximum antenna current should coincide with minimum SWR. To produce an SWR of nearly 1:1 it is necessary to vary the coupling of the link. In the case described it was found that a low SWR was obtained with a one turn link only. The loading on the transmitter is adjustable by the loading capacitor selector of the pi tank circuit. When tuning a system like this it may be necessary to repeat the tuning procedure several times.

The low frequency section of the AT5 aerial tuning unit was used as a standby tuning unit although it did not have as high an efficiency as the large coil. These units were very cheap and easily obtained once. There should still be some around.

THE RECEIVER

The following comments apply equally to converters and transverters. To minimise images it is best to use a high frequency IF. Peter Forbes used 7 MHz with his transverter: the author used a 5.8535 MHz xtal frequency which is the zero frequency in an FRDX400 tunable IF.

Even when using a high frequency IF, images and cross modulation from the broadcast band are a great problem. Old disposal receivers such as the AR7 and the BC348 perform very well on these frequencies. Modern all band amateur type receivers tend to suffer from front end overload and are not usually optimised on LF. These receivers are also greatly improved by using antenna tuning. There are a few disposal receivers around which are designed for these frequencies and these are ideal.

The transmitter antenna tuning was used for receiving but it covered a rather limited frequency range. The AT5 ATU was found to be excellent for general listening.

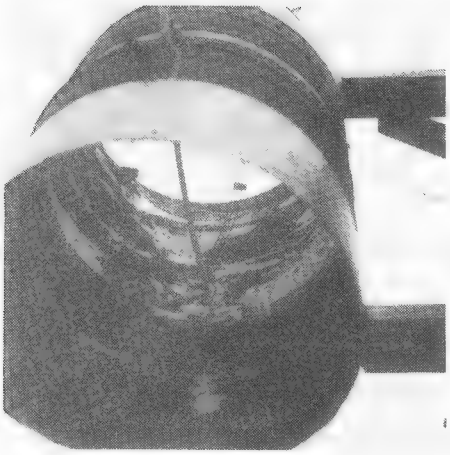
On a receiver that is working properly it should be possible to hear non directional beacons every 3 kHz from 200 kHz up to 415 kHz. In most cases several NDBs can be heard on one frequency. Between 100 kHz and 200 kHz there are no strong signals but there are teletypes and a number of nondescript signals to be heard. Siberian broadcast stations can sometimes be heard at night. Loran, which sounds like the woodpecker, can be heard at night between 90 and 110 kHz. If you cannot hear these signals I suggest you look at your receiver and antenna tuning otherwise you won't have much chance of hearing amateur experimental stations.

PROPAGATION

It is intended to make this the subject of a separate article, therefore only a brief description is given here. Sky waves are reflected from the boundary between the atmosphere and the bottom of the ionosphere in the same way as waves are reflected by the ground. At low frequencies ground waves travel much further than at HF, low angle sky wave reflection is much better than high angle, sky wave propagation is better at night than day. Below about 300 kHz sky wave reflection improves with decreasing frequency and reaches a peak of efficiency about 12 kHz. The ground wave is dominant to about 400 to 500 km distance from the transmitter where the sky wave takes over for longer distances.

RESULTS

On 31st May, 1981 two way communications were established between AX3T35 at Oak Park (Melbourne) and AX3T36 at Lake Boga. Since then Dennis Sillette VK3WV was issued the call VL3Y and has also been worked by



Inside view of the loading coil.

AX3T35. AX3T35 has been copied in Mount Gambier, Stawell, Stratford, Hobart and many places in between during the day. At night the signals have been copied north of Newcastle and in the Flinders Ranges. In general, reception is better in the ground wave range during the day because of lower static.

I must mention that a number of people have listened for the signal and have not heard it. In the areas from which reports have been received there has been a big variation in individual strength and readability reports. I put this result down to different receiving conditions at different stations. At the moment I do not believe I have achieved best efficiency of radiation from my backyard nor has the maximum receiving range been achieved. In this type of work anyone with a small farm would be at a great advantage.

I would like to thank the many people who sent in reports.

REFERENCES

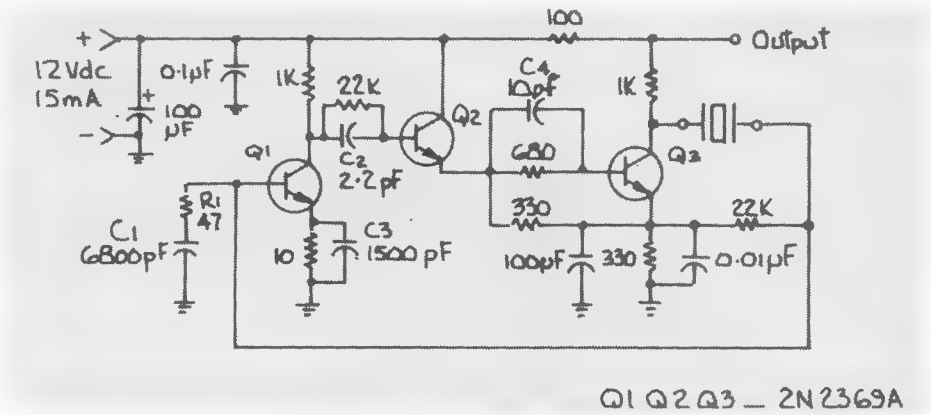
Reference 1. Home Station Antenna on 160 metres. Amateur Radio June 1971

Reference 2. Quartz Crystal Oscillator Circuits. Electronics Australia November 1972

AR

TRY THIS

CRYSTAL OSCILLATOR WORKS AT 1 kHz to 10 MHz



Circuit of a transistor universal oscillator works for any crystal at 1 kHz to 10 MHz. Even through the four-decade range, the circuit needs no adjustment.

A universal crystal oscillator that operates over a four-decade range — 1 kHz to 10 MHz — needs no adjustment for such a wide disparity in frequency and produces an output at or near the crystal's series resonant frequency.

As shown in the figure, three transistors are connected as a direct-coupled video amplifier with negative DC feedback. The crystal is connected in the positive feedback path from the collector of transistor Q_3 to the base of transistor Q_1. Because high-frequency crystals have a lower series resistance than low-frequency ones, the series combination of resistor R_1 and capacitor C_1 is used to attenuate feedback at the high frequencies. This combination also reduces feedback resulting from the crystal's shunt capacitance.

High-frequency peaking is accomplished with capacitors C_2, C_3, and C_4. Although the frequency range can be increased with more peaking, doing so invites spurious oscillations when low-frequency crystals, with their high shunt capacitance, are used.

The circuit produces about 7 V pk-pk in the form of a square wave for low frequencies. For best operation, components with tolerances of 5 percent or better should be used.

Fred Brown, Consulting Engineer, PO Box 2053, Rancho Santa Fe, Calif, 92067.

Reprinted from "Electronic Design", 22nd December, 1983

AR

QSP

CABLE TV

During February the RSGB contacted all its members in Milton Keynes in order to survey the extent to which radiation from Cable TV was affecting the 144 MHz band and to establish the scale of the problem. They hope to have a progress report soon.

Meanwhile, in the USA the national lobbying group for Cable TV, the National Cable TV Association, has asked the FCC to dismiss the ARRL petition to ban cable companies from using frequencies within the amateur bands.

An NTVCA representative has said that claims that his industry has failed to take proper action to eliminate leakage are ". . . uninformed and unfounded . . ." However, the ARRL has said that it intends to pursue the matter and notes that many cases of leakage from Cable TV systems remain unresolved.

Adapted from Rad Com, April 1984

AR

HELPFUL HINT

In the Volume 22, No. 6 edition of the SA WIA Journal a very interesting letter was published concerning a handy hint for replacing soldering iron tips.

The letter as it was published is as follows:

Having tried, without success, to replace the carbon tip on a "Miniscope" soldering iron (the tip of the push rod twisted off), I referred the matter to the manufacturers.

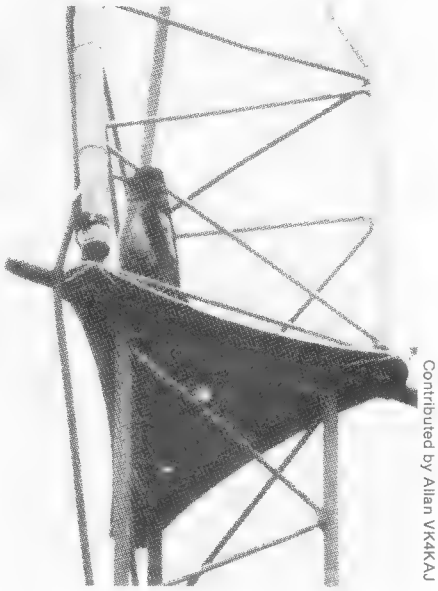
They have been kind enough to supply me with a small quantity of their Scope anti seize conductive lubricant, to be used on the thread of the push rod, which is intended to overcome the seizure of the tip on the thread.

As there is a possibility others have experienced similar difficulty, I thought it might be a useful tip for the "Hints and Kinks" Department.

According to the label, it can be used on copper tip threads as well as push rods threads. I have also found it a good idea to clear the thread in the body of the iron with a tap before inserting a new copper bit.

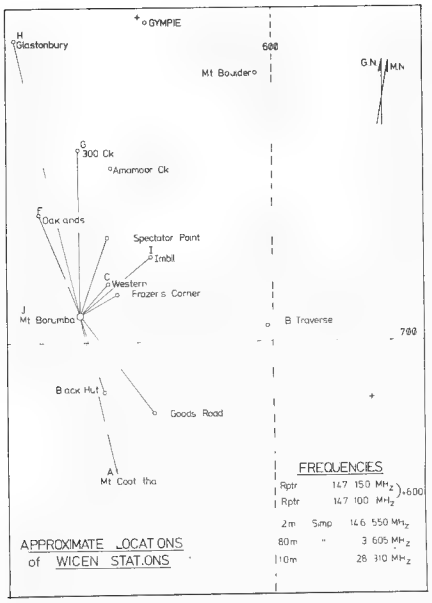
TOM LAIDLER VK5TL

AR



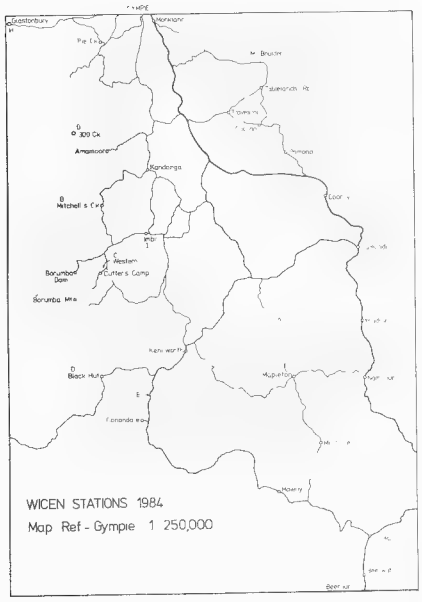
From QZ, October 1983
Contributed by Allan VK4KAJ

Some people have everything, even a personal woodpecker.



RALLYING AND WICEN

Brian Mennis, VK4XS
11 Jethro Street, Aspley, Qld 4034



"Car 21 has just left in a cloud of dust and stones" was a message that was sent at 06 0210 to Bruce VK4ABE/P, for the information of spectators near his station, and this was just one of the many messages sent during the night of Saturday, 5th May, when WICEN members provided communications to assist in the running of the 1984 Hardie National Rally during the recent Queensland Labour Day long weekend.

The Rally, which is part of the Australian Rally Championships, started at midday Saturday at the Mt Coot-tha quarry in the western suburbs of Brisbane, with a Special Section (speed section to the uninitiated) around the quarry to show off the cars to spectators in Brisbane. The field then drove 175 kilometres north to run all Saturday night through an extensive area of State Forest around the small town of Imbil. This year, seventy cars started in Brisbane but, as the Rally progressed, the field got smaller and smaller with only thirty eight cars actually completing the Rally. Imbil was the main control centre and members of the Brisbane Sporting Car Club (BSCC) set up a computer in the Imbil Show Grounds hall to process scoring information fed back by the WICEN network.

WICEN's involvement with the Car Rally, then known as the Lutwyche Shopping Village Rally, started in 1979 when the then WICEN co-ordinator in Brisbane, George McLucas VK4AMG, was conducting training evenings in WICEN procedures and looking for some sort of exercise for his group. At the same time the BSCC were pondering over the difficulties of running a Rally without effective communications. The one common factor was Peter O'Connor VK4KIP, who was part of the WICEN group and also an active member and official of the Car Club.

A meeting of minds took place and WICEN became firmly involved in Rallying, at least for this important National event. The WICEN training programme was then modified to culminate just before the Rally, and this exercise put the final polish on all the training that had been mainly theoretical up to that point.

For the first couple of years, the main Rally Control Centre was 100 kilometres north of Brisbane at Nambour, on the south eastern edge of the Rally area. As the involvement of WICEN was to be an exercise in emergency communications, the intention was to operate as closely as possible to the methods and frequencies as would be necessary in a disaster situation around Brisbane. Frequencies were to be UHF, VHF, and 10 metres. To obtain reasonable VHF coverage around the Rally area, and to have any hope at all of getting back to Nambour, a high site was required for a base station. Perusal of the topographic maps of the area narrowed the choice down to Mt Borumba, some ten kms south west of Imbil.

At a height of 624 metres, Mt Borumba was crowned by a twenty metre fire tower, and, more importantly, there were access tracks built by the Queensland Department of Forestry. Unfortunately, although the tracks were there, they had not been maintained, and the first visit to the mountain involved clearing tracks, cutting off logs, filling in washouts etc. Before any tents or equipment could be set up on the mountain, one metre high grass had to be cut down around the tower, the ground levelled off for the two generators, and generally a lot of hard work put in. By 1984, Forestry were maintaining the tracks at a very good standard, and were entering into the spirit of the event by arranging for grass to be cut around the fire tower, and even for a few trees to be cut down, ready for the Rally weekend.

The first exercise was almost primitive by today's standards. On Mt Borumba, where operations were (and still are) under the control of Geoff Adcock VK4AG, the base was set up virtually as a manual repeater station with all traffic originating from control points in the Rally area being manually copied and re-transmitted to Nambour by a team of twelve operators over VHF and UHF links. Although high gain antennas were used, the intervening terrain made copy in Nambour difficult, but not impossible. Operations were not assisted by the 150 mm of rain that fell early in the night, but this added realism to a "disaster" situation. This realism was also assisted by the eighteen hours of non-stop operation, which has always been a feature of this exercise.

After slipping and sliding down the washed out tracks from Mt Borumba at the conclusion of the exercise, George VK4AMG, Geoff VK4AG, and their team of forty operators put their heads together and decided to try to overcome the problem of manual transmission for the 1980 exercise. Geoff VK4AG, made up a black box which would automatically retransmit an incoming VHF signal onto the UHF link. However, as this was not a repeater operation, and operators at the various control points could not hear each other, there was a fair bit of confusion and doubling. Notwithstanding this problem, about ten percent of the traffic was successfully routed by this method.

1980 was also dogged by bad weather, but this showed that WICEN operators could react to changed circumstances, regardless of conditions.

The fire tower on Mt Borumba with the shack under canvas to the left.

With the Rally Control Centre in Nambour, there were continual problems with communications, not only from the WICEN point of view, but also the Rally officials were finding it necessary to be running up and down to Imbil from Nambour by car. WICEN suggested that the logical answer to all these problems was to shift the Rally Control Centre to Imbil. This had the advantage for the Rally officials that it was at the centre of the Rally area, and for WICEN that it was accessible directly from a number of control points on VHF. More importantly, Imbil was virtually line of sight from Mt Borumba. The BSCC adopted the idea of the shift to Imbil for the 1981 Rally.

A major breakthrough on the communications side came just three weeks before the Rally date, when DOC approved a policy for licensing portable WICEN repeaters, and followed this up with a licence for VK4RWI, which had been recently constructed by Geoff VK4AG. With the Rally Control Centre at Imbil, and the repeater operational at Mt Borumba, WICEN was really able to provide excellent communications. There were still some control points that either could not access the repeater, or were operated by novices, but most traffic went through the repeater.

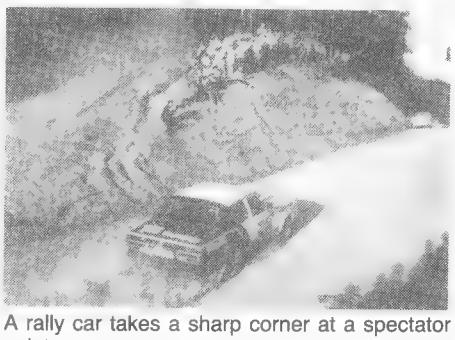
While the primary purpose of the exercise is to provide a safety net in the event of a serious accident, in the six years of WICEN involvement there have been only five real emergencies, and only two of these have been serious enough to require an ambulance.

Most of the Rally traffic handled by WICEN originates from fixed points, and usually consists of lists of time intervals for each car for the preceding stage. In the first couple of events, while this information was accepted by officials, it was always checked. Over the years that the Rally and WICEN have operated together, Rally officials have come to accept data received without reservation, and this goes straight into their computer, which then generates progressive scores and relative placings. These are available very quickly, and are re-broadcast over the WICEN net to be passed on to control officials or to spectators at designated spectator points. Other traffic handled included normal Rally organisational messages, and general information on the progress and state of the competitors. The message at the beginning of this article was fairly typical of the latter. It should be noted that all traffic is handled using full WICEN procedures.

Rally rules require that, before the competitors start a section, that section must first be checked through by a Rally official, who "opens" it. His car, being the first through, is known as the "zero car". Opening a section, and declaring it safe can still lead to trouble when cattle wander back onto the road, or, as happened in one Rally, the zero car opened a gate and left it open, but "somebody" closed it before the first car came hurtling around a corner, expecting to find an open gate, with disastrous results. After the field passes, a sweep car follows through to ensure that there are no cars broken down, or people injured. Both the zero and sweep cars, along with six other cars driven by Rally officials, are equipped with commercial high band VHF equipment. A base station on Mt Borumba is virtually the only station that is able to communicate with these cars in the Rally area, and this equipment is fitted in as part of the overall WICEN operation on Mt Borumba.

One year, the sweep cars were provided and operated by a four wheel car club from Brisbane, who were using 27 MHz CB equipment. But, although a base for this frequency was established on Mt Borumba, the CB channels proved to be virtually useless. Individual rally car drivers have requested a similar service on 27 MHz, but WICEN has not become involved in any further operations on the CB channels.

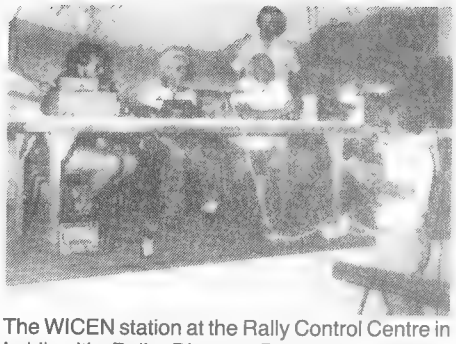
By the time of the 1984 Rally, which was now sponsored by the James Hardie Company, and known as the Hardie National Rally, all the systems were pretty well set, but this year one additional 2 metre channel was available as the Gympie repeater had been commissioned a month or so earlier. Since this repeater could be accessed from Brisbane



A rally car takes a sharp corner at a spectator point.

using reasonable power and antennas, it was planned to use it to relay scores from the first section at Mt Coot-tha. But Murphy's Law struck! The station location at Mt Coot-tha was adjacent to Brisbane's FM broadcasting transmitters and a spurious from one of them came right up on the Gympie output frequency. Alternative arrangements were quickly made, and the scores went through without delay.

Geoff Adcock VK4AG, who has been in charge of operations for WICEN since 1981, provided his usual first class documentation for each of the operators taking part. This included a general description of the event,



The WICEN station at the Rally Control Centre in Imbil with Rally Director Peter Marshall discussing operations with from left – David VK4NLV, Fred VK4AFJ, Kevin VK4NTF, Martin Saunders and partially obscured Tom VK4AVC.

an outline map of the Rally area, a signals net diagram, and a flow chart showing the times that the various control points were to be manned. In total, thirty one members of WICEN from Regions 3a, 4 and 5 manned Mt Borumba, the Imbil Control Centre, nine control points, two spectator points and two points that fed information to the spectator points.

At Mt Borumba, the following channels were operative: *Rally Base on commercial high band VHF, 70 centimetres to Imbil, WICEN portable repeater, complete with cavities, and separate antennas, 2 metres on the Gympie repeater, and 2 metres on simplex channel 6550.*

This year, no HF equipment was set up at Mt Borumba, although several mobile rigs were available if the necessity arose.

At the Imbil Rally Control Centre, equipment was set up to operate: *80 metres, 70 centimetres, and 2 metres on the WICEN and Gympie repeaters.*

Trouble was experienced with the two 2 metre channels as the transceivers used were suffering mutual interference. However, this was traced to antenna problems, and a cure will be effected by the 1985 Rally. Unfortunately, this trouble meant that the Gympie repeater could not be used for traffic into Imbil. This was a great pity, as at times the WICEN repeater became overloaded.

WICEN involvement in the 1984 Rally was an unqualified success, but, as with all exercises, lessons can be learnt and used in real emergencies. Experience gained in the early Rallies was most noticeable in an emergency situation following a big hail storm in one of Brisbane's outer suburbs, where it was obvious that the WICEN operators who responded fastest and performed the best were, in general, those who had participated in the Rally exercises.

While the systems at present developed and in operation are reasonably efficient, there is always room for improvement and it has been suggested that, with RTTY equipment becoming smaller, perhaps some portable stations using this mode might start appearing in future exercises. And with rumours around that the next Rally might become an international event, such equipment might be needed to keep up with the flow of information. Again, this flow would be of the same magnitude as in a disaster situation, so RTTY experience would be of great value for WICEN.

AR

MODIFYING TCA CAVITIES FOR AMATEURS

R K Colsell, VK2AWA
7 Marlin Place, Emerald Beach, NSW 2450

The operative word is 'amateurs'. At the start of this project I knew practically nothing about cavities and accordingly write this article not as an expert — far from it — but possibly to encourage others to have a go, and perhaps to save them making the many mistakes I made.

These cavities are designed for 'high-band' use, about 174 MHz, and will only tune down to about 147.5 MHz without modification. To bring them down into the repeater section of the band, a small plate is bolted to the bottom of the tuning plunger. Brass is ideal, copper is good, but even tin-plate seems to work. The plate can be any shape apparently and about 30 to 35 mm square will do; it is not very critical as these dimensions will put the resonant position about half-way up the threaded portion of the tuning rod.

If you check the performance now, you should find about 2 to 3 dB insertion loss and about 10 to 13 dB rejection of an unwanted frequency 600 kHz away from resonance. The tuning is fairly broad but quite easy to spot.

You may find signs of corrosion inside on the passivated silver plating. Don't worry about it yet. Wait until you have finished putting sticky finger marks all over it. Just before final assembly a light rub with metal polish followed by a wash with methylated spirits will restore it to pristine brightness. It need not shine like a mirror and don't overlook the top cap which is a low impedance point especially where the top cap joins the barrel.

Now refer to the very excellent ARRL book on "FM & REPEATERS". The text and diagrams are most helpful. If you look carefully at the diagrams of the coupling loops you will see that the ARRL recommendation if you are building your own shows the hot end of the loop next to the centre shaft. Whereas in the TCA cavities it is the cold or earthy end. Also the ARRL loops are longer.

And, of course, you are going to add reactors across the cavities, to produce something like the 30 dB notch you hope.

I did try putting these reactors inside the cavity, but it was no go. So you will have to make a little box to go on top of the cavity to hold the coaxial connectors, and to shield the reactors and the wires leading down to the coupling loops.

Some old house-wiring power cable provided copper wire about 1.5mm diameter, from which coupling loops about 38mm long were bent, with a long tail up through the hole to where the connecter used to be, and across the box to the new position of the connector.

It so happened that I tried an inductor first, largely because at the time I didn't have a suitable capacitor. For the inductor I used about 63mm of the same copper wire. The length and position of this wire is quite critical, and it is a cut and try process. The thicker the wire the less inductance.

As the good book says, the value of the reactance is going to establish the separation of the peak and the notch, which we want to be 600 kHz of course. But it is not all that hard, because the peak flattens out on the opposite side to the noch, which gives you a bit of tolerance. The notch is the important one of course and it's tuning should be quite sharp.

When you come to install a capacitor, the 1.5mm wire has much too much inductance in series, so you will need short straps of brass or copper, quite wide ones. Tuning is easy, of course. Find the peak at the wanted frequency with the tuning plunger, then tune the capacitor for the dip at the unwanted frequency. Then repeat the process a couple of times, in case of interaction.

With reasonable luck, you should achieve less than 1 dB insertion loss, with 20 to 25 dB rejection — maybe better!

One odd thing I noticed, but which I cannot explain; the bottom cap is not only not plated on the inside it is actually painted. So I tried a cavity first with the bottom cap removed, and then standing on a bright shiny reflector. Apart from very small amounts of retuning, neither seemed to make much difference. *Anybody got any bright ideas?*

In the absence of any laboratory type test gear, I used a synthesised VHF transceiver as the signal source — well, two, actually; a hand-held IC-2A and an old Kyokuto. On the other side of the cavity, I had an ordinary SWR meter in the forward position, plugged into a 50 ohm dummy load. By using the 'calibrate' control of the SWR meter and juggling the input power, it was possible to calculate relative readings quite accurately down to 20 dB.

If you are not happy with the performance of your modified cavity, try bending the coupling loops towards or away from the central plunger. This dimension is probably the most critical of them all — about 3 to 4mm seems about best.

You did remember to wipe off your fingerprints, didn't you?

AR

Introduction To 10m FM

Ian Sinclair, VK3DSI
58 Chute Street, Mordialloc, Vic. 3195

Most amateurs associate frequency modulation as a mode used on the VHF and UHF bands for local and repeater contacts, however many may not realize it is also used on the top end of the ten metre band for DX QSOs.

Ten metre FM is nothing new, having been used by US amateurs for many years using converted VHF low band transceivers. Lately, however, it has gained popularity with the production of "all mode" transceivers, such as the FT901, IC740, TS660 and more recently the TS430S, IC751, FT102 and FT757GX. There are also 10m FM only sets such as the Comtronix FM80 and Azden PCS 2800. CB radios can also be converted to FM mode.

The majority of 10m FM contacts occur on 29.600 MHz, the international simplex calling frequency, although FM signals can be found anywhere between 29.0 to 29.3 MHz and 29.5 to 29.7 MHz. 29.0 MHz to 29.3 MHz is used in Japan for local contacts, in 20 kHz channels, with 29.3 MHz the Japanese calling frequency.

Repeaters

Just like two metres, there are also repeaters on 10m FM. Most of these operate with 100 kHz offset, with the input frequency below the output frequency, in 20 kHz step channels. Their input/output frequencies are 29.520/29.620, 29.540/29.640, 29.560/29.660, and 29.580/29.680 MHz. Most of these are in the USA, such as WR6AHW in Southern California on 29.620 MHz. There are also some outside the States, such as the Japanese sponsored DX1SA Manila, Philippines repeater on 29.660 MHz. Some repeaters require tone burst to access so as to avoid opening up several at once. The Stateside repeaters can be accessed in Australia depending on band conditions for contacts with low power and mobile stations.

Another type of repeater is the remote base. A ten metre frequency, such as 29.6, is linked electronically to a VHF or UHF frequency, allowing truly incredible contacts. So far I have discovered one such link to 220 MHz in Los Angeles when I worked two mobile stations, and another in Texas to 2 metres where I worked two handhelds! Some of these links are private allowing an amateur remote operation of a home station.

DXing on 10m FM

Despite the declining sunspot cycle, there is still some good DX to be worked on 10 metres FM. So far, in less than a year, I have heard or worked VK, ZL, JA, HL, W, VE, KH6, KA6 and P29. Perhaps the most common DX comes from Japan and California. There is also the summer sporadic E season allowing incredibly strong signals from interstate as 6m operators know. One VK2 station had me almost full scale, and could still read me using less than a watt! In fact most stations use low power usually of 10 to 50 watts for good full quieting signals as good as on two metres. The only occasional problem is with multi-path signals causing phase distortion.

So if you like to listen to the quality of FM, and like to work DX, maybe ten metres FM is for you! AR

HELP PREVENT PIRATES

Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.

INTERNATIONAL NEWS

ARRL THIRD PACKET CONFERENCE

The Third ARRL Amateur Radio Computer Networking Conference was held on 15th April, with 100 packeteers in attendance. Printed copies of the conference proceedings are available via mail from ARRL HQ for $10 each (ten to forty nine copies at $7.75 each, over fifty copies, $7 each). It contains 124 pages of papers on various uses for packet radio as a hobby or as an emergency communications system. Also included is a complete copy of the CCIR Recommendation 476-3, which is the basic specification for AMTOR.

Address: ARRL, 225 Main Street, Newington CT USA 06111. **AR**

INVITATION TO THE 14TH SEANET CONVENTION

The Malaysian Amateur Radio Transmitters Society is hosting the 14th SEAnet Convention in Penang on the 16th, 17th and 18th November 1984 and as such would like to extend an invitation to interested amateurs.

The Convention will be held at the Eastern and Oriental Hotel in Penang.

To enable MARTS to cater for airport reception on arrival and departure, they are asking visitors to add US$15 to their deposits/advances.

Registration Fees: US$50.00 or equivalent per person.

YLs and XYLs are most welcomed as usual and their registration fee will be the same.

Registration starts in the morning of Friday 16th November and visitors are requested to bring along their QSL cards which will be displayed.

For further information write to Box 13, Penang, Malaysia or check into SEAnet on 14.320 MHz daily at 1200 UTC.

AR

CHANGES OF AMATEUR BANDS IN KOREA

Changes in amateur bands including the release of 10MHz band, was made in Korea as from 29 October, 1983 to read as follows

1.810 –	1.825 MHz	28.000 -	29 700 MHz
3.500 –	3.550 MHz	50.0 -	54.0 MHz
7.000 -	7.100 MHz	144.0	146.0 MHz
10.100 –	10.150 MHz	435.1	438.1 MHz
14.000 –	14.350 MHz	1,260.0	1,300.0 MHz
21.000	21.450 MHz	2.4 –	2 45 GHz

From Region 3 News Feb 1984 **AR**

A NOTE ON AMATEUR RADIO IN NIUE = ZK2

Niue suffers from a declining population and now there are only 2500 people left there.

Some representatives of the California DX Club and Foundations visited Niue in 1981. They fostered a club but interest among the locals fell off rapidly.

A TS820 transceiver was left behind but retrieved twelve months later because it was not used.

The club received three ARRL 14 MHz Tx kits but none of them has been made fully operational.

Operation from Niue is now mostly from expatriates principally Harry Coleman ZK2AE and Bob Sutton ZK2RS.

Contact for further information concerning amateur radio in Niue is as follows: Mr Peter Mulhare, Director of Telecoms, PO Box 37 NIUE

From Region 3 News Feb 1984 **AR**

CHANGES IN VANUATU

The Vanuatu P & T Department is to tighten up on licensing procedures in the republic and in addition carry out stiffer policing of radio operations within the territory.

As from October 1983, the YJØ prefix will be allocated to non-resident and short term bona fide amateurs who can produce documentary evidence from one of the major countries that they have radio amateur status. Long term residents including expatriates on long term employment will continue to be allocated two letter calls with the YJ8 prefix.

YJØ call will consist of three letters in the series YJØAAA to YJØAZZ.

Any ..../MM calls will only be for valid use within Vanuatu waters. This ruling will show up those stations operating illegally and warn legitimate amateurs that they are pirates.

The Vanuatu Amateur Radio Society – VARS – has advised of its intention to apply for membership in both the IARU and IARU Region III Association.

From Region 3 News – Feb 1984 **AR**

OUTWARD QSL BUREAU

Important items to note when QSLing.

Have you enclosed your AR address label with your outward cards?

The Outwards Bureau is an exclusive service for financial WIA members only.

Have you sorted your cards in alphabetical countries listing order?

Does the DX amateur, QSL via the bureau? Some overseas countries do not accept cards for non-members.

Does the DX amateur only QSL direct? If so, don't send cards to bureau. Send direct as requested.

Does the DX amateur have a QSL manager? If so please indicate on card so that the card goes to the correct destination first up.

Is your callsign, name & address printed on your QSL cards?

Do your "V"s look like "U"s? Please print both clearly.

Have you changed your callsign, name or address lately? Please advise the bureau of same. Include AR address labels with cards.

Are your cards larger than normal, 5½" x 3½"? If so they could be damaged when parcelled, particularly if they are sent in an envelope of standard size.

From QTC, June 1984 **AR**

BARTG JUBILEE

This year the British Amateur Radio Teleprinter Group celebrates its Silver Jubilee. It has come a long way from its foundation in 1959 when a few pioneers got together to exchange ideas on the, then, new techniques of amateur RTTY.

The group nowadays caters for most forms of data transmission ranging from RTTY, Amtor and Fax to the more advanced techniques of digital repeaters. They also publish a quarterly magazine of approximately sixty pages featuring technical and theoretical ideas and items of news and general interest. Membership is around 1300.

Adapted from, Rad Com, April 1984 **AR**

QSP

EIGHT NEW TELEVISION STATIONS TO OPEN IN SELF-HELP SCHEME

Technical specifications for eight new television stations in the Self-help Television Reception Scheme, several serving communities with large Aboriginal populations, have been approved by the Minister for Communications, Mr Michael Duffy.

The stations approved are:

- *Bollon (pop 170) — a small town in the south-west Queensland shire of Balonne (programmes will be fed to the translator by satellite);*
- *Stonehenge (25), Jundah (100) and Windarah (80) — all small towns in the south-west Queensland shire of Barcoo (satellite-fed);*
- *Mornington Island (800) — an Aboriginal community off the northern coast of Queensland, in the Gulf of Carpentaria (satellite-fed);*
- *Bamaga (1500) — an Aboriginal community on the northern tip of the Cape York Peninsula, Queensland (programmes will be relayed from Thursday Island);*
- *Tannum Sands/Boyne Island (5000) — an outlying suburb of Gladstone, on the central coast of Queensland (programmes will be relayed from Gladstone); and*
- *Kojonup (1100) — a town in the south-west of Western Australia (terrestially-fed).*

All the stations will receive ABC programmes except Tannum Sands/Boyne Island, which will receive programmes from the commercial television station.

This group of eight approvals brings the number of self-help stations to nine — the first station, at Argyle in Western Australia, was given the go-ahead in August, 1983. A number of other proposals is likely to be approved over the next six months.

The scheme involves the purchase and installation by the community of a translator system, which re-transmits programmes from either the ABC or commercial stations into individual homes.

Costs of installing a self-help system vary, but electronic equipment and antennas for a typical system cost upwards of $4000. In many cases the local shire council, or perhaps a mining company, assists with costs, but the more subscribers to a system, the less each individual is required to pay.

AR

THE EXPERIMENTAL AMATEUR

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909

SEQUEL TO JENNY

Experiments with aerials are not likely to lead to the discovery of new basic theories, just as experiments with dropping objects from a height will not lead to revision of the laws of gravity. All we can hope to do is develop shapes and sizes which satisfy the limits imposed by locations and environments and hopefully get satisfactory results for the intended use.

The "Jenny Dipole" is an example of taking a basic idea and adapting it for a purpose. The result is an aerial which has poor performance compared with a full length dipole but acceptable performance for its intended use. I have had several hints that the original article would have been better with an explanatory diagram included, so see Fig 1.

On a recent fishing trip I had Jenny along for use on the 27 MHz band when out in the boat and for occasional use on ten metres in the car. One non-fishing morning I decided to try and keep my twenty metre sked with VK6BO by screwing the short leg into the tip of the long leg and hopefully getting the combination to work as a twenty metre whip on the car; it did and I worked Roy in Perth from Cape Conran and he reported my signals readability five and strength three. I now have a 27 and 28 MHz whip which doesn't need a ground plane and which can be used on 14 MHz with a ground plane.

The logical follow up to this discovery was to try two twenty metre whips in series to make a 20/40 combination. I was confident of success and went ahead and constructed a long twenty metre element and a short one just as I had with Jenny. It worked OK as a twenty metre dipole but failed when joined for forty. Like many others before me I had failed to refer back to the basic theories. After many head scratchings and a last resort reference to the basic theory I discovered why Jenny's joined legs worked but others didn't.

Fig 2 is a graph for 10, 15 and 20 metres of the formula quoted in my previous article about helicals:

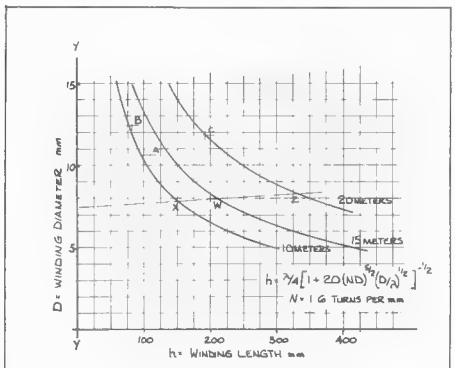


Fig 2 — Graph. See text.

$$h = \frac{\lambda}{4}\left[1 + 20(ND)^{\frac{5}{2}}\left(\frac{D}{\lambda}\right)^{\frac{1}{2}}\right]^{-\frac{1}{2}} \quad \ldots\ldots (1)$$

Point A on the graph is the winding at the tip of the long leg ie 110 mm of close wound twenty four gauge on an average diameter of 10.7 mm and point B is the winding at the tip of the short leg — 83 mm of the same wire on an average diameter of 12.5 mm. The distance YC is approximately equal to YB + YA = 193 mm. and the diameter at C is approximately (10.7 + 12.5)/2 = 11.6 mm. This means that two *helicals* in series will resonate at half the frequency of each only if the combination results in a new average diameter and length which satisfies the equation (1) for the new wavelength. It was only by chance that the Jenny combination chosen was correct for the half frequency. The idea is practical but someone else can have the task of choosing the right combinations. You don't have to have the combination exactly correct. Get as close as possible and make final adjustments with tuning tips. I will return to the idea later but in the meantime . . .

On my previous attempts at multiband helicals bands were changed by tapping up and down the winding, shorting out the unused portion at the bottom; these worked well but the mechanical problems led me to look for a more robust method. The screwing together of separate elements suggested by the experience with Jenny, works well and I have now made two multibanders, one for myself and one for Richard, VK3CRG. These illustrated are at Fig 3. The ANJ model has a straight ten metre quarter wave for the base element and for 15, 20 and 40 metres short helical elements are added progressively to change bands. Thus the forty metre aerial consists of ten metre base plus the 15, 20 and 40 metre helicals. The CRG version uses a ten metre base shorter than a quarter wave with the difference made up by a short tip helical; to change bands a separate helical for each band is screwed to the tip of the ten metre base. The CRG version is proving the most robust, the ANJ version is inclined to come apart at the joins rather too easily.

There is a further complication with the screw together multibanders; the hardware required at the joins upsets the tuning to the extent that the theoretical length calculated from (1) is no longer correct and a return to some "cut and try" is necessary for final adjustments. This was not a problem with tapped helicals and if a solution is found for the mechanical problem I would prefer these

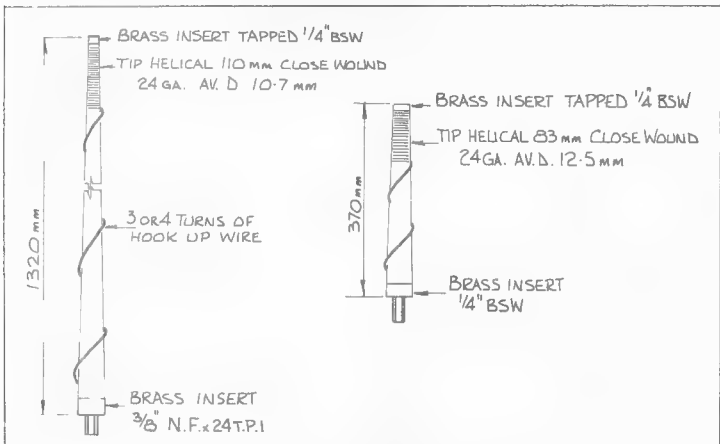


Fig 1 — Jenny Dipole — Radiating Elements
Note: See January 1984 AR for assembly photographs.

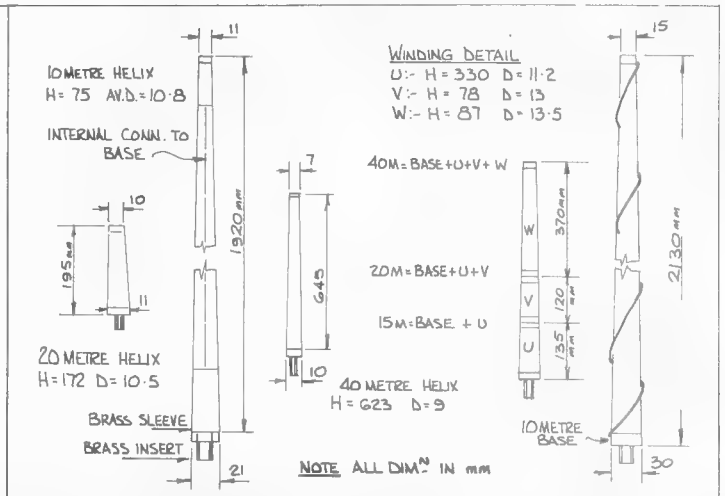


Fig 3 — The CRG Whip. **The ANJ Whip.**

because of the simpler design and construction. Of course the most robust solution would be to make a separate helical for each band, but the full complement would occupy a lot of space in the car.

The electrical design of tapped helicals is simple and it is pleasing to get one to work first try on the chosen bands; at Fig 2 the dotted line YZ is a graph of average diameter against rod length for a rod with a taper of 5.7 mm per metre. The point on the Y axis is the tip diameter of this particular rod (7.5 mm). A second point is found by calculating the average diameter for a chosen length back from the tip; thus

$[7.5 + (7.5 + 5.7L)]/2 = 7.5 + 5.7^{L}/_{2}$; joining these two points and extending the line through the graphs for each wavelength gives at the points of intersection the required helical lengths for each band measured from the tip. For this example 330 mm will be required to resonate on the 20 metre band, 215 mm will be required for the 15 metre band and 150 for the 10 metre band, ie the lengths given by points Z, W and X respectively. Small adjustments will be required for these lengths to compensate for tap hardware and the length of "jumper" between each tap and the base connector of the aerial; the "jumper" of course is part of the radiator and in most examples will be a large pitch helical conveniently wound to take up the slack when the tapping point is changed.

AR

NEW PHOTO COMPETITION

Due to the success with the interest and participation of the competition run over the last twelve months, Agfa Gevaert Limited have again been kind enough to donate Agfa Videotapes and film to the value of $100 for the best photograph submitted and published in the magazine during the period July 1984 and June 1985.

The basic rules for the competition which will be known as the AGFA COMPETITION 1984-1985 are:

1 Only financial members of the WIA and their immediate families are eligible.

2 Professional photographers, members of Federal Executive, the Publications Committee, employees of the Wireless Institute of Australia, Agfa Gevaert Limited and any contractor to the WIA or their immediate families are precluded from obtaining the prize.

3 Only photographs submitted in the form of colour transparencies, colour prints or negatives, B & W prints or negatives taken later than the 1st March 1984 are eligible.

4 The winner, will be selected in July 1985 by Agfa Gevaert Limited from the best picture appearing in AR each month during the period. The lucky winner will be announced in the September 1985 edition of AMATEUR RADIO.

5 No correspondence will be entered into by the judges or the editor of the magazine regarding the competition at any time.

6 All transparencies, negatives and prints whether printed in the magazine or held in abeyance will be returned to the sender if suitably identified.

Taken from the Sun-News Pictorial dated Thursday 30th May, 1931.

GIRLISH VOICES Tell The World

WOMEN'S NEW SPHERE

Who is the best girl announcer of the amateur broadcasting stations. Opinions differ in every suburb, but there is no doubt that the best known is Dorothy Maddick, of 3EF, whose clear treble has been heard on the air as far afield as Fiji, the Solomon Islands and America.

Although she is only 12, Dorothy is the veteran of them all, as she has been broadcasting from her father's station at Elwood since she was eight, and is said to be the youngest radio announcer in the world. She is terribly keen about her voluntary job, puts all her announcements in her own words and sometimes sings and recites.

Dorothy's main objection is broadcasting jazz records — she doesn't like jazz and would much rather put classical music over the air.

Her Brother's Speaker

A newcomer compared with this young veteran, is Miss Jean McLean, a girl still in her teens, who for the past year has been doing fifty percent of the announcing from her brother's station, 3GK, and doing it very well. She doesn't confine her attention to announcing for she plays the piano for most of the numbers broadcast, and joins very effectively in the community singing.

Listeners will know her better as the Baby Elephant, the name by which she is often referred to over the air by her brother — in true brotherly fashion.

Station 3HB is another of the amateurs which has a girl for its regular announcer. The girl in this case is Miss Lorna Byrne, who has been her father's broadcasting announcer for the past two years without once having an attack of microphone fright. She has the true radio voice, according to listeners and has become so keen about radio that she is now working to gain her amateur certificate of

competency which will give her authority to take complete charge of a station.

Not the same voice

A feminine voice is often heard announcing from 3CB, but it is very rarely the same voice two Sundays running; friends eager to see what it feels like to talk to a microphone supply the voices, but there is no regular voice on the job.

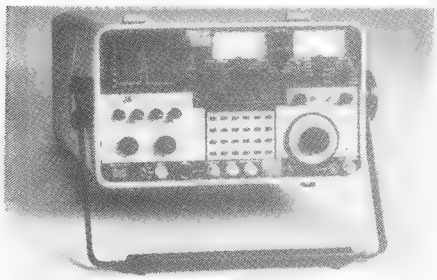
Another woman amateur announcer who occasionally sends her voice over the air is Mrs W Richards who sometimes tells listeners what to expect from 3RI.

This extract was given to C R Nelson VK3WC by Stuart McLean VK3AIA, 284 Balaclava Road, Caulfield, ex VK3GK, Sydney Road, Brunswick.

FM1200

Vicom Australia Pty Limited announces the release of a new multi-function, microprocessor controlled communications service monitor produced by IFR Inc USA. Fully portable, the FM1200 covers the range 250 kHz to 1 GHz and delivers features and special functions never before obtained in a unit of this class or price range.

Standard fitting is an RS232 interface bus and special functions available include: generator/receiver scan, RF memory, tone memory and programmable display intensity. With a μprocessor-based system it has been possible to display analog test responses digitally. The internal non-volatile memories extends the monitoring and automatic testing capabilities to display on the VFD (Vacuum Fluorescent Display) frequency, frequency error to 1 Hz resolution, modulation both AM and FM, RF power, SINAD, distortion, signal strength duplex offset and a variety of pulse, tone and tone sequence formats.



A special feature of the FM1200 is the ability to simultaneously generate a fixed output level and simultaneously receive a signal. This duplex testing facility allows testing of repeaters and their associated systems both in "off air" or separate transmit receive lines.

Audio generators — one fixed, one variable — generate from 10 Hz to 30 kHz in sine, ramp, square or triangle wave forms and special functions include encode and decode capabilities for DCS (digital coded squelch).

The spectrum analyser is a versatile 1 - 1000 MHz unit with ten calibrated dispersion selections from 1 kHz per division and 300 Hz bandwidth up to 1 MHz per division and 30 kHz bandwidth. The receiver is fully operational during spectrum analyser operation.

The accuracy of all functions is referenced to a TCXO master oscillator. Also available as an option, is a crystal oven with an accuracy of 0.05 PPM to allow simulcast paging systems to be accurately assessed. The FM1200 embodies the latest microprocessor, bus controllable technology with advantages and features never before available. Further details are available from: Vicom Australia, 57 City Road, South Melbourne, Vic, (03) 62 6931, Vicom Australia, 6th Floor, Eagle House, 118 Alfred Street, Milsons Point, (02) 436 2766.

AR

JIL SX-200 USED IN RESCUE HELICOPTER

JIL's popular programmable scanning receiver, the SX-200, has been chosen by one of Victoria's leading rescue organisations for use in their Bell 206 Jetranger helicopter as both a homing unit and monitoring receiver.

Located on the Southern tip of the Mornington Peninsula which separates Port Phillip Bay from Bass Strait at Sorrento, the Southern

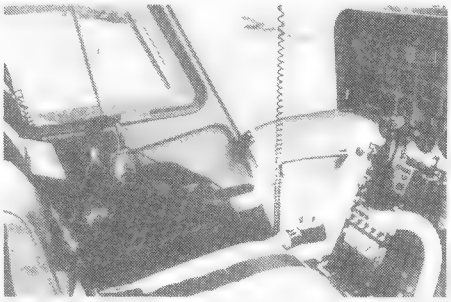
AR SHOWCASE

Peninsula Rescue Squad has before it a herculean task. Its organisation must cover the immense areas of Port Phillip Bay, Western Port Bay, a considerable distance out into Bass Strait, as well as along miles of Victorian Coast.

The time spent in locating an activated survival beacon aboard a probable disabled boat is of the utmost importance both from the point of view of the survival of the occupants and the cost incurred for such a search.

By installing a JIL SX-200 and an associated homing readout aboard their Bell Jetranger helicopter the squad have been able to considerably cut down their in-air times when on a survival beacon search.

They are now able to fly virtually a straight line, from their pad at the Sorrento Police Station, direct to the disabled craft, saving perhaps hours of time and hundreds of dollars worth of fuel.



The SX-200 was chosen by the Southern Peninsula Rescue Squad for its continued history of reliability and performance. To achieve the specialised task required by the squad, of both direction finding, and general monitoring it was coupled to a digital bearing display unit manufactured in the USA by NAVSAR. The combined units allow direction finding operations to be performed over the frequency range 108 to 180 MHz at 5 kHz channel spacing. General monitoring operations are also possible over the SX-200's 33,000 channels between 26 and 88, 108 and 180 as well as 380 and 514 MHz.

As a general monitoring unit at their headquarters the Southern Peninsula Rescue Squad have integrated into their operating console an additional SX-200. This unit is charged with the job of monitoring the various 27 MHz marine channels, the aircraft flight service area frequencies, the 156 MHz marine channels, the 168 MHz police channels, and when required the 163 MHz Victorian Country Fire Authority band.

For further information on the JIL SX-200 in its direction finding role or general use as a programmable HF/VHF/UHF scanning receiver contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road, Mitcham, 3132, (PO Box 97 Mitcham) Victoria. Phone (03) 873 3777. AR

TWO NEW REGULATED POWER SUPPLIES FROM PARAMETERS

Parameters has released two new, low cost power supplies from Topward Electric Co.

The Model 2303 is a single output 30 V/3 A unit with both constant voltage and constant current capability. Ripple and noise is a low 2 mV RMS and line regulation is better than 0.02 percent. Load regulation over the entire current range is better than 0.05 percent + 5 mV and output impedance is 5 m ohms (max). Measuring only 111 mm x 150 mm x 280 mm and weighing only 4.1 kg, the Model 2303 is an ideal general purpose supply for laboratory use and is priced low enough to provide excellent value for the hobbyist.

The Model 4303 is a full featured dual tracking, triple output supply with independent metering on two outputs. Output is ± 30 V/3 A, 5 V/3 A and a user can then select the 30 V supplies to be either tracking or independent.

Either constant voltage or constant current modes are available with ripple and noise being better than 0.5 mV RMS and 0.05 mA RMS. Line and load regulation are both better than 0.02 percent + 2 mV. Output impedance is 5 m ohms and tracking error is less than 0.1 percent + 5 mV.

Both supplies are fully overload protected with an LED overload indication.

For further information please contact Parameters Pty Ltd, PO Box 573, Artarmon, 2064. Telephone (02) 439 3288.

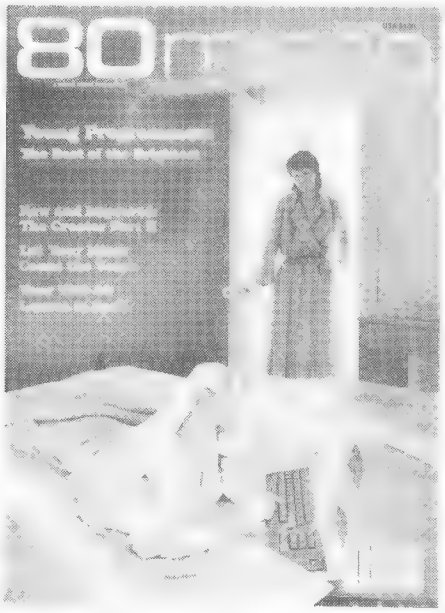
AR

1984-1985 YOUNG PROGRAMMERS' CONTEST

80 Micro, the largest independent source of information on Tandy Corporation's TRS-80 microcomputer systems, has announced its 1984-1985 Young Programmers' Contest.

Aspiring programmers, eighteen years old and younger, are eligible to win one of ten cash prizes, including the Grand Prize of $300.00. The winners will be announced in the February 1985 issue of 80 Micro.

The editors plan to publish the Grand Prize winning entry and the three First Prize winning programmes in 80 Micro. The programmers will receive both the cash prizes and the amount that 80 Micro normally pays for publication rights. The remaining six winning programmes will be considered for publication.



Honorable mention recipients will win complimentary subscriptions to 80 Micro. Their programmes will also be considered for publication.

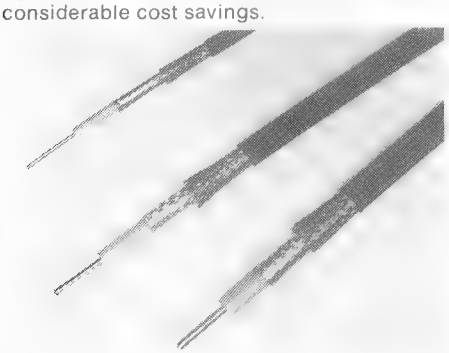
The editors of 80 Micro will judge entries in three age categories: eleven and under, twelve through fourteen, and fifteen through eighteen. Entries can be written for the TRS-80 Model III, Model 4, or Model 4 P, and will be judged on the basis of originality, documentation, and programme elegance.

Full contest details and entry blanks are being published each month in 80 Micro prior to the entry deadline of 1st October, 1984, or write to James Leonard, 375 Cochituate Road, Box 880, Framingham. MA 01701.

AR

UPDATED RANGE OF LOW LOSS RF CO-AXIAL CABLES

GFS Electronic Imports of Mitcham Victoria have recently released in Australia an updated range of Low Loss RF Co-axial cables. The three cables in the range, manufactured by Nippon Tushin Densen, are all double shielded foam dielectric types. They feature loss figures not unlike heliax type cables but of considerable cost savings.



The following table indicates the loss of each cable in dB per kilometre at various frequencies.

		LOSS IN dB/KM					OUTER SHEATH
TYPE	IMPED-ANCE	100 MHz	200 MHz	400 MHz	900 MHz	1000 MHz	DIAMETER MM
5D-FB	50	55	81	121	187	198	7.3
8D-FB	50	39	56	85	130	135	11.1
10D-FB	50	31	46	68	105	110	13.1

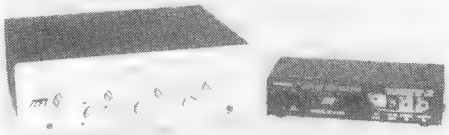
Both 10D-FB and 8D-FB are eminently suited to UHF applications, particularly 10D-FB if long runs are involved. 5D-FB is designed as the general workhorse for HF/VHF applications and has loss figures quite a deal less than RG-8 type cables even though it is smaller in diameter. All these types are constructed using a solid but quite flexible centre conductor surrounded by a foam dielectric. A thin aluminium/mylar shield completely covers the dielectric and it, in turn is covered by a tinned copper braid. Terminating the cables is made quite simple by the braid.

The Importers also stock a range of "N" type connectors to suit the three cable as well as PL-259 to suit 5D-FB and 8D-FB. Prices are $2.10/metre for 5D-FB, $3/metre for 8D-FB and $4.60/metre for 10D-FB.

For further information contact the Importers: GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Vic. 3132, phone (03) 873 3777. AR

NEW VIDEO ENHANCER COMBINATION UNIT WITH NOISE CANCELLING

MFJ Enterprises of Mississippi USA have just released, through their Australian distributors, GFS Electronic Imports, an updated Video Enhancer combination unit, the MFJ-1421. It combines a video enhancer that incorporates extremely effective noise cancelling circuitry, a distribution amplifier for driving up to three outputs and a Sync Stabiliser for reshaping degraded Sync pulses.



The MFJ-1421 has been especially optimised for use on the Australian PAL TV System. Unlike a lot of other imported enhancers which are designed for the United States NTSC System it provides optimum enhancement of picture.

Those who have copied video cassettes from one machine to another will certainly have noticed the much poorer quality of the copy when compared to the original. With an MFJ Video Enhancer in line between the two VCRs only an extremely critical eye would see any difference between original and copy.

Unique to the MFJ-1421 is its built in Noise Cancel Control. With other enhancers increasing the Enhancement control increases the picture noise (snow). The MFJ Enhancer allows you to increase enhancement to the desired level and then cancel the picture noise with its cancel control thus providing a fully enhanced picture with minimum noise.

Available in two versions, the MFJ-1421 is designed for video in and out, and the MFJ-1421 RF includes a separate high quality RF Modulator, the MFJ-1432. Price of the MFJ-1421 is $240 while the MFJ-1421 RF is $331 plus $12 P&P in both cases. The photo shows the MFJ-1421 and the MFJ-1432 RF Modulator.

For further details contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Victoria, 3132. Phone: (03) 873 3777.

AR

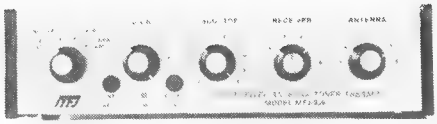
ANTENNA MATCHER/PREAMP FOR SWLS

Most SWLs have a common problem with antennas which restricts the performance of their often very expensive communications receivers. Due to the limitations of space, an SWL antenna usually consists of a random length of wire strung up where it best fits. Because such an antenna is not resonant its match to the receiver is poor and its performance even poorer.

MFJ Enterprises market an antenna tuner/pre amplifier designed specially for SWL applications, the Model MFJ-959.

This unique tuner is designed to match a random wire or coax fed antenna down to 50 ohms and then introduce gain thus overcoming the loss presented by a non resonant antenna.

The built in tuner uses a low noise high gain transistor to provide a maximum of 20 dB gain



which may be varied by the user through a front panel mounted gain control. Switching is provided for selection of two antennas as well as two receivers. Additional switching is included to allow complete bypassing of the MFJ-959, attenuation with the tuner, tuner only and tuner with amplifier.

In tests recently made on the MFJ-959 using a random wire, as much as eight S-points increase in signal strength was achieved when compared with just the wire on its own. The MFJ-959 requires a power source of 9 to 18 volts and sells for $205 plus $12 P&P.

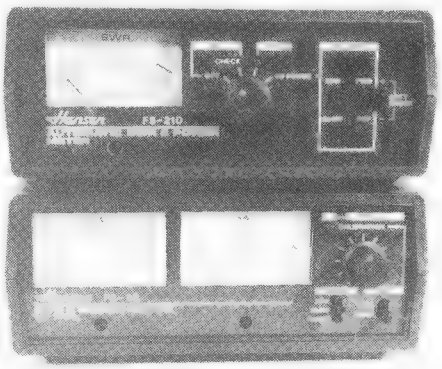
For further information contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria, 3132. Phone (03) 873 3777.

AR

TWO NEW SWR-POWER METERS

Recently released in Australia by GFS Electronic Imports of Mitcham Victoria is not one but two new Power-SWR meters manufactured by Hansen.

The first, the model FS-210 is fully automatic and requires no operation intervention at all when taking SWR readings. It covers a frequency range of 1.8 to 150 MHz and includes two power ranges, 0-20 and 0-200 watts. Provided with a single meter type analogue display the FS-210 uses two internal 9 V batteries as its power source.



The second new meter from Hansen is the model FS-5S and like its brother the FS-210 it covers the frequency range 1.8 to 150 MHz. It does not provide an automatic SWR readout but uses the standard manual system with two metres. It contains three power ranges, 0-20 watts, 0-200 watts and 0-2000 watts. Meter illumination is available if an external 12 V AC or DC power source is connected to a rear mounted socket on the FS-5S.

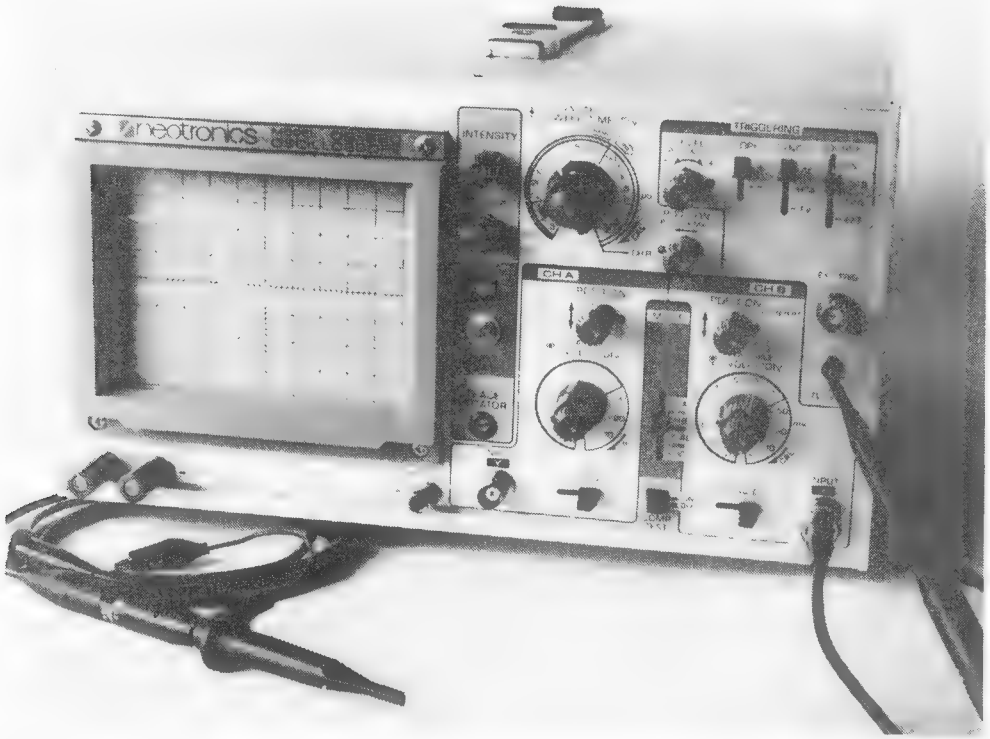
Price of the new meters is $173 for the FS-210 and $106 for the FS-5S plus $3 post and packing.

For further details contact the Australian distributors: GFS Electronic Imports, 17 McKeon Road (PO Box 97), Mitcham, Victoria 3132. Phone (03) 873 3777. AR

Mention you saw it in AR when you buy from our ADVERTISERS.

EQUIPMENT REVIEW

Ron Cook VK3AFW
TECHNICAL EDITOR



NEOTRONICS MODEL OS-620 20 MHz DUAL TRACE OSCILLOSCOPE

Neotronics is a Japanese company which produces among other things a fine range of inexpensive oscilloscopes. This particular model has a 20 MHz bandwidth two channels and a sensitivity of 5 mV to 20 V per division.

In addition it has an X-Y mode with the same sensitivity for the X deflection as above but with a 1 MHz bandwidth. Full Z axis modulation can be achieved with TTL levels. A TV video sync filter is also provided.

VERTICAL DEFLECTION

Two channels are provided and either or both may be displayed. For timebase speeds below 1 mS/div both channels are chopped at 200 kHz and at higher sweep rates the channels are displayed alternately. There is an add function and an invert function for channel B so that the sum or difference of two signals may be displayed. The deflection factors are switched in the usual 1-2-5 sequence, plus a continuously variable control to give full adjustment of the display.

TIME BASE AND TRIGGERING

The sweep times range from 0.2 μS to 0.5 S per division on 20 ranges with a 1-2-5 sequence plus a variable control. A x5 magnifier is available for all ranges. Automatic triggering is available for any signal exceeding one division vertical deflection. Triggering may be from channel A or B or external or line. Adjustable +/− trigger level is provided for. Triggering can be achieved in AUTO from 20 Hz to 20 MHz. The sync selector provides for AC, HF reject and TV. In the TV sync mode vertical sync is automatically selected for sweep rates below 0.1 mS/div and horizontal sync for higher sweep rates.

COMPONENT TESTER

A novel feature is the provision of a two terminal component tester. This applies 9 V RMS to the component through a resistor. The short circuit current is about 2 mA. The horizontal trace represents the voltage across the component and the vertical deflection represents the current through the component. A resistor gives a straight line sloping down from left to right. The line is horizontal for open circuit and vertical for a short circuit. Capacitors and inductors both give an elliptical trace. The characteristics of diodes and zener diodes can be displayed.

TEST RESULTS

The instrument worked well in all modes. A small gain adjustment was necessary prior to test after which the amplitude accuracy was found to be exceptionally good. The instrument was found to completely meet it's specified performance. Triggering on modulated signals was easy to achieve. The component tester was rated as of no real use except for testing a limited range of zener diodes (< 10 V). It does not allow measurement of other components and the range which give a useful display is very limited. Further it is not possible to tell the difference between a small inductor and a large capacitor as both give the same display if of appropriate impedance.

The internal calibrator was accurate and enabled quick adjustment of the probe compensation.

CONCLUSION

If you are in the market for a dual trace 20 MHz oscilloscope this one will be hard to beat. It weighs 7 kg and is 162 (H) x 294 (W) x 352 (D) which is a whole lot better than some of the other units around. It is of open construction and could easily be serviced by an experienced amateur. The handbook is quite good for this class of instrument.

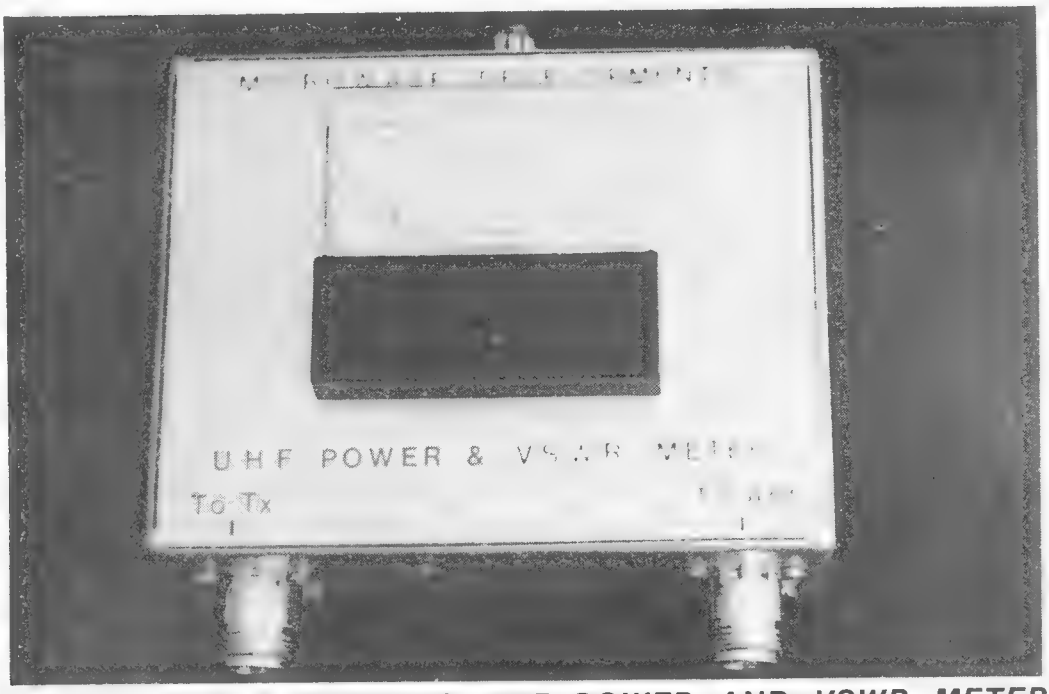
The test unit was kindly supplied by Neotronics Pty Ltd, 314 Lower Plateau Rd, Avalon NSW, (02) 918 8220.

The recommended price is $465.00, $536.80 incl tax.

AR

EQUIPMENT REVIEW

Evan Jarman, VK3ANI
TECHNICAL EDITOR



MICROWAVE DEVELOPMENTS UHF POWER AND VSWR METERS (SWITCHED)

The measurement of SWR, while used as a guide to aerial "efficiency", has often been given more significance than it should have. However, with more and more equipment, containing solid state final amplifiers being put into use, a more meaningful reason for low SWR becomes obvious, it prevents damage.

In the VHF and UHF ranges SWR meters require more care than those used on HF bands particularly in the pickup and sensing circuitry.

Many of the SWR meters running at UHF are more correctly called indicators for they don't measure SWR, rather they give an indication of lower SWR.

These SWR meters from Microwave Developments certainly are the most accurate meters that I have come across. Both units were well within the specifications provided, which are:

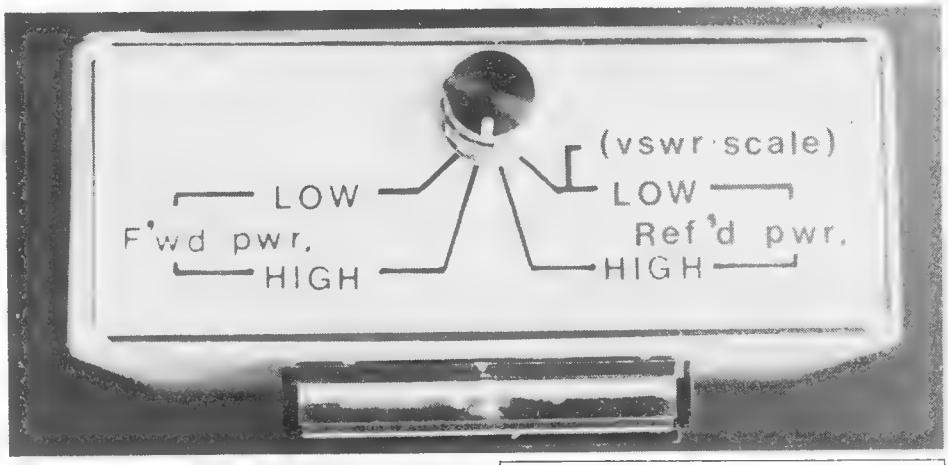
Maximum VSWR caused by meter	*1.08*
Directivity	*30 dB minimum*
Insertion loss	*0.3 dB maximum*
Power Ranges	*50 W forward/7.5 W reverse (7.5 W/1.25 W)*
Meter Accuracy	*± 5% at FSD*

The other specifications which were used when testing these meters are:

Frequency range	*430 to 442 MHz*
Impedance	*50 ohms*

The user instructions even quoted discrepancies in meter readings at out of normal band frequencies, ie five percent high at 450 MHz and eight percent high at 477 MHz.

On test jig the only discrepancies found were lower than those stated, ie FSD accuracy was +4/-5 per cent and the insertion loss for the higher power meter was +0.26 dB maximum.



Of the two units supplied the higher power unit is the better. It used type N connectors and more closely followed the true VSWR.

Both meters were very good and the difference in results, compared to the Hewlett Packard equipment they were tested on make either meter worthy of any UHF amateur's consideration.

Both test meters, but not the test jig, came from Microwave Developments, PO Box 274, Mount Barker, SA 5251. Telephone (08) 391 1092.

AR

SEVENTY FIFTH LOGO COMPETITION

Have you entered the 75th Logo Competition? (see page 15 June AR).
If you are not in it, you cannot win it.
The prize will be $100 worth of books of your choice.

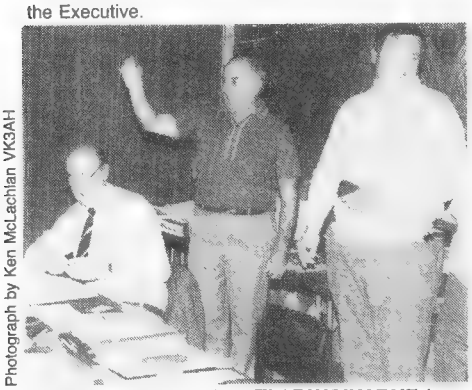
1984 FEDERAL CONVENTION

The 48th Annual WIA Convention was held in Melbourne from the 28th to 30th April, 1984. Delegates at the Convention were from each Division – a Federal Councillor and an Alternate Councillor with VK1, VK3 and VK5 bringing observers. All members of the Executive attended and Michael Owen VK3KI, was present for some of the period. Federal Co-ordinators and some members of sub-committees attended the Convention to present their Reports.

The Executive for 1984 was elected as follows:

President	Dr. David Wardlaw	VK3ADW
	Peter Wolfenden	VK3KAU
	Earl Russell	VK3BER
	Jack O'Shannassy	VK3SP
	Michael Owen	VK3KI
	Allan Foxcroft	VK3AE
	Tony Tregale	VK3QQ
	Ross Burstal	VK3CRB
	Ron Henderson	VK1RH
	Bill Rice	VK3ABP

The retiring members, Bruce Bathols VK3UV, Gil Sones VK3AUI, Courtney Scott VK3BNG, and Ken Seddon VK3ACS, were thanked by all for their work on the Executive.



Photograph by Ken McLachlan VK3AH

NZART President Don ZL3RW/VK3BXF (centre) makes a presentation to retiring WIA President Bruce VK3UV. Left of photo – Reg Macey Federal Secretary/Manager.

The statutory business of the Institute was carried out as required by the Companies Code (Victoria) ie the adoption of the accounts and the Executive Reports.

The Convention then moved to the Agenda items and Federal Co-ordinators Reports. As in previous years the Co-ordinators Reports were discussed with great interest. The Awards Manager's Report and the Contest Manager's Report, being both their final Reports on completion of their tours of duty were both adopted with votes of thanks by the gathered delegates. The IARU Report presented by Michael Owen VK3KI, resulted in two motions arising which directed the Executive to vote "aye" for the new IARU Constitution and "nay" to a proposed amendment to calender 176 by South Africa. Other Reports which engendered interest were those made by the Federal Education Co-ordinator Brenda Edmonds VK3KT and the Federal Historian Max Hull VK3ZS.

Of the Agenda items, there was a discussion on the VK5 Division motion regarding the formulation of a VK8 Division, this was assisted by the presence of Henry Andersson VK8HA at the Convention as an observer with the VK5 Division. No firm action was taken, Henry VK8HA, was directed to have further discussions with his fellow VK8 members and the VK5 Division, we shall no doubt hear more of this in the future.

A VK1 Division proposal to amend the Articles and Memorandum of Association was withdrawn and replaced by a motion that these amendments be considered by a legal sub-committee before presentation to the Council.

A proposal by VKI Division that draft policy statement on Narrow Band Modes other than CW be adopted was carried after the terminology had been clarified (the new policy statement and terminology is printed elsewhere in this issue).

It was resolved to adopt the IARU Region III policy on Intruder Watch as an addition to the current WIA policy.

A proposal to obtain a spot frequency on narrow band in the low frequency part of the spectrum for the use of amateurs in Australia was agreed upon.

It was resolved that the Executive should take up a number of points with DOC ie PLI – obtain a uniform policy, third party traffic – increase thereof, Draft Amateur Operator's Handbook and repeater linking.

Some discussion took place on the 75th Anniversary, 1985 and several Agenda items were concerned with this – a history of the WIA be written, a special award be created to publicise the event worldwide. Both items were carried unanimously.

An application by the Institute to join the Confederation of Australian Sport was discussed and agreed upon.

These are just a few of the items discussed in depth at the Convention, space does not permit a detailed report, but more information if required can be obtained from your Federal Councillors.

THE WIRELESS INSTITUTE OF AUSTRALIA
A Company limited by Guarantee
Incorporated under the Companies (Victoria) Code.

Executive's Report

The Executive of the Wireless Institute of Australia, report that with respect to the surplus of the Institute for the financial year of the Institute ended 31st December, 1983 and the state of the Institute's affairs as at the end of the financial year:

1. The Members of the Executive of the Institute in office at the date of this report are:

B R Bathols	*VK3UV*	*President*
K C Seddon	*VK3ACS*	*Vice Chairman*
C D H Scott	*VK3BNG*	*Treasurer*
P A Wolfenden	*VK3KAU*	
A Foxcroft	*VK3AE*	
G Sones	*VK3AUI*	
W M Rice	*VK3ABP*	
Dr D A Wardlaw	*VK3ADW*	
E R Russell	*VK3BER*	
J O'Shannassy	*VK3SP*	

2. The principal activity of the Wireless Institute of Australia is to:
   (a) Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.
   (b) Promote the co-operation between the Divisions in the encouragement and development of amateur radio.
   (c) Safeguard the interest of the Divisions and the members in relation to frequency allocations rights and privileges.
   (d) Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.
3. The excess of income over expenditure of the Institute for the year ended 31st December, 1983 was $13,946. (Deficit for 1982 – $15,297). There is no provision for income tax required as the Institute is exempt under the Provisions of Section 103A (2) (c) of the Income Tax Assessment Act.
4. There were no material transfers to or from reserves or provisions during the financial year, other than those disclosed in the accounts.
5. The Institute has not issued any debentures during the financial year.
6. The Executive, before the Income and Expenditure Statement and Balance Sheet were made out, took reasonable steps to ascertain what action had been taken in relation to the writing off of bad debts and the making of provisions for doubtful debts. The Executive also caused all known bad debts to be written off and did not consider it necessary to make provision for doubtful debts.
7. At the date of this report the Executive is not aware of any circumstances which would render the amount written off for bad debts or the amount of the provision for doubtful debts inadequate to any substantial extent.
8. The Executive before the Income and Expenditure Statement and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets (other than bad and doubtful debts referred to above) were unlikely to realise in the ordinary course of business their value as shown in the accounting records of the Institute. It has caused such assets to be written down to an amount which it might be expected to realise or adequate provision to be made for the difference between the amount of the value as so shown and the amount that it might be expected so to realise.
9. At the date of this report the Executive is not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.
10. At the date of this report there does not exist any charge on the assets of the Institute which has arisen since the end of the financial year and which secures the liabilities of any other person or any contingent liability which has arisen since the end of the financial year.
11. There is no contingent or other liability which has become enforceable, or is likely to become enforceable, within the period of 12 months after the end of the financial year which, in the opinion of the Executive, will or may substantially affect the ability of the Institute to meet its obligations when they fall due.
12. At the date of this report the Executive is not aware of any circumstances not otherwise dealt with in this report or accounts which would render any amount stated in the accounts misleading.
13. In the opinion of the Executive, the results of the Institute's operations during the financial year were not substantially affected by any item, transaction or event of a material and unusual nature.
14. In the opinion of the Executive there has not arisen in the interval between the end of the financial year and the date of this report any item, transaction or event of a material and unusual nature likely to affect substantially the results of the Institute's operations for the next succeeding financial year.

Photograph by Ken McLachlan VK3AH

Executive members L-R Reg Macey, Bill VK3AFW, Bruce VK3UV and David VK3ADW.

15. No Member of the Executive of the Institute has, since the end of the previous financial year, received or become entitled to receive a benefit.
16. The activities of the Institute during the financial year consisted of the publication of its monthly magazine "AMATEUR RADIO" and the Annual Call Book, the administration of the register of members of the State Divisions of the Institute and dealing with Governmental and other bodies in matters of national nature affecting radio amateurs in Australia
17. There has not been any significant change in the state of affairs of the Institute during the financial years.
18. No matter or circumstance has arisen since the end of the financial year to significantly affect –
   (i) the operations of the Institute;
   (ii) the results of those operations; or

(iii) the state of affairs of the Institute, in financial years subsequent to the financial year.

19. It is not likely that there will be any changes or developments in the operations of the Institute in financial years subsequent to that financial year.

Made and signed in accordance with a resolution of the Executive, made this 22nd day of March, 1984 by members of the Executive, B R Bathols, C D H Scott

THE WIRELESS INSTITUTE OF AUSTRALIA
INCOME AND EXPENDITURE STATEMENT FOR THE YEAR ENDED 31st DECEMBER, 1983.

1982 $		1983 $
	INCOME	
	AMATEUR RADIO	
2610	Subscriptions	2400
30673	Advertising	46184
2303	Inserts and Sundries	2484
35586	TOTAL INCOME	51068
	EXPENSES	
	AMATEUR RADIO	
74	Debt Collection	–
19494	Postage	21191
95526	Printing and Publishing Costs	80210
16146	Salaries	20775
4389	Travelling and Sundry Expenses	14869
135629	TOTAL EXPENSES	137045
100043	Excess Expenditure Transferred to General Account representing cost of AR to members	85977

THE WIRELESS INSTITUTE OF AUSTRALIA
INCOME AND EXPENDITURE STATEMENT FOR THE YEAR ENDED 31st DECEMBER, 1983.

1982 $		1983 $	1983 $
	INCOME		
	GENERAL		
	DONATIONS		
116	Other	150	1550
	Import Duty By-Law	1400	
20873	Interest Received		14020
–	Call Book Surplus		17101
–	WIA Book Vol 1		68
151258	Subscriptions		172996
6479	Magpubs and Sales Surplus		3082
178726	**INCOME**		208817
	EXPENSES		
	GENERAL		
-	Advertising & Promotion		1324
1300	Audit Fees		1505
7	Awards		207
622	Bad Debts		-
743	Bank Charges		1091
1172	Committee Expenses		1475
7515	Convention Expenses		7904
100043	Cost of Amateur Radio		85977
975	Depreciation		3306
819	Electricity		545
5470	EDP Expenses		6500
399	General Expenses		1328
	Import Duty By-Law		2435
1053	Insurance		1503
8658	IARU Travelling & other Expenses		4347
137	Membership Recruiting		–
7412	Postage and Freight		7577
3681	Printing & Stationery		4562
4718	Rent & Rates		4560
809	Repairs & Maintenance		532
45094	Salaries and Secretarial		55206
704	Superannuation		–
2196	Telephone		1044
496	Travelling and Sundry Expenses		1943
194023	TOTAL EXPENSES		194871
(15297)	OPERATING DEFICIT SURPLUS		13946
56460	ACCUMULATED FUNDS		41163
41163	RETAILED FUNDS		55109

THE WIRELESS INSTITUTE OF AUSTRALIA
BALANCE SHEET AS AT 31st DECEMBER, 1983.

1982 $		$	$
	MEMBERS FUNDS		
41163	Accumulated Funds		55109
	REPRESENTED BY		
	INVESTMENTS		
5800	Australian Resources Development Bank		5800
162536	Short Term Deposits		151848
168336			157648
	Fixed Assets		
9079	Office Equipment - at Cost	16284	
(3548)	Less Prov'n for Depreciation	(6854)	
5531			9430
5531			9430
	CURRENT ASSETS		
112	Cash in Hand		56
(1150)	Cash at Bank		33814
13832	Trade Debtors		13116
(2000)	Less Prov'n for Doubtful Debts		(2000)
11217	Stock on Hand - at cost		13634
22011			58620
195878			225698
	LESS		
	NON CURRENT LIABILITIES		
	PROVISION FOR		
2972	Amateur Satellites	2972	
6366	Holidays & Long Service Leave	2083	
			5055
500	Deposit VK4		500
1505	Ron Wilkinson Achievement Award		1623
11343			7178
	CURRENT LIABILITIES		
1000	Trade Creditors		4141
–	Education Grant		500
142372	Subscriptions in Advance		158770
143372			163411
41163	Net Assets		55109

WIRELESS INSTITUTE OF AUSTRALIA
STATEMENT OF THE EXECUTIVE

In the opinion of the Executive of the Wireless Institute of Australia –

(1) (i) The Income and Expenditure Statement is drawn up so as to give a true and fair view of the surplus of the Institute for the financial year ended 31st December, 1983.

(ii) The Balance Sheet is drawn up so as to give a true and fair view of the state of affairs of the Institute as at the end of the financial year.

(iii) At the date of the statement, there are reasonable grounds to believe that the Institute will be able to pay its debts as and when they fall due.

(2) The accounts have been prepared under the historical cost convention accounting standards.

Signed on behalf of the Executive by B R BATHOLS
C D H SCOTT

THE WIRELESS INSTITUTE OF AUSTRALIA
AUDITORS REPORT

To the members of The Wireless Institute of Australia.

We have examined the accounts of The Wireless Institute of Australia.

In our opinion –

(a) *The accompanying accounts which have been prepared under the historical cost convention are properly drawn up in accordance with the provisions of the Companies Victoria Code and so as to give a true and fair view of:*

(i) the state of affairs of the Institute as 31st December, 1983 and the results for the year ended on that date; and

(ii) the matters required by Section 269 of that Code to be dealt with in the accounts.

(b) *The accounting records and other records and the registers required by this Code to be kept by the Institute, have been properly kept in accordance with the provisions of that Code.*

HEBARD & GUNNING
Chartered Accountants
Signed by Partner – P W Hebard.

Melbourne
8th March, 1984.

PRESIDENT'S REPORT

I have pleasure in presenting the Executive report for the year 1983. Although the report is basically up to the end of the year 1983 as required by the Companies Act, the report also takes in some important events which lead up to the 1984 Federal Convention.

1.0 OVERVIEW

1.1. Again, the Wireless Institute of Australia has made significant progress both within the service as a direct benefit to our members, and outside the service in negotiations with various Government Departments.

1.2 1983 was the World Communications Year. The WIA actively supported it with several public displays, however, we were quite disappointed that the media did not pick up the theme as we would have expected.

The Federal Government did have a liaison officer for WCY, but regretfully, there was not a great deal of activity from this area.

1.3 Needless to say, WCY came and went as far as the general public was concerned. The amateur service received little if any publicity from WCY as a whole.

1.4 There still remains an on-going requirement for recruitment of new members, and particularly for new amateurs to join our ranks.

1.5 The number of amateurs as at the 31st December 1983 was as follows:– (Source, DOC statistical summary, Dec 1983)

Novice:	*3345*
Limited	*2773*
Limited/Novice	*964*
Unrestricted:	*8370*
TOTAL	*15452*

2.0 HIGHLIGHTS FROM THE YEAR

2.1 The new Radio Communications Act was passed in both houses of Parliament (as at the date of this report, we are still awaiting the Act to be Proclaimed).

2.2 An extra 28% Tariff Duty was levied on ALL amateur HF transmitting equipment.

2.3 The WIA has successfully negotiated a new Tariff By-Law to enable the import of HF, VHF and UHF at a levy rate of only 2%

2.4 In respect of the new Tariff By-Law provisions the WIA has been appointed the overseeing body in determining the validity of transmitting equipment as coming within the scope of the new By Law.

2.5 The Federal President Mr B R Bathols VK3UV and Dr D Warlaw VK3ADW, attended the NZART Convention in Dunedin New Zealand in June 1983.

Our representatives returned with a wealth of information and saw the continuing need for constant liaison to be maintained between the two amateur groups.

2.6 Phone patch facilities were agreed to by Telecom. On the surface all appeared OK as far as amateur radio was concerned, but in depth there are several anomalies to be overcome. At least the matter has received some attention, and the WIA is continuing negotiations with the relevant authorities.

2.7 Amateur Radio magazine continues to maintain its previous high standard, much support has been received from members. AR celebrated its 50th Anniversary during the month of October 1983, with a special edition.

2.8 The WIA is fortunate to have had a representative at several meetings of the Standards Association of Australia (SAA) during the year, when matters of concern to the Amateur Service were under discussion.

2.9 As well as the above the Institute has:–

(a) Successfully negotiated for the return of 50.000 to 50.150 MHz to the Amateur Service, as a first step toward the return of full 50.000 to 52.000 MHz segment.

(b) Provided input to the DOC for the interim Handbook for Operators of Stations in the Amateur Service. The WIA is monitoring progress of the Radio Communications Act, ensuring involvement in discussions with drafting regulations pertaining to the Amateur Service.

(c) Obtained acknowledgement from the DOC, who have written to a number of other countries requesting the formalisation of further Third-Party-Traffic arrangements.

(d) Secured further privileges for "K" calls on VHF and above bands.

(e) Received acceptance from the DOC for an increase in the frequency of examinations for AOCP, AOLCP, AONCP.

It has been a very busy and successful year!!

3.0 MEMBERSHIP AND SERVICES

3.1 Despite a consistant number of amateurs entering the service, membership numbers have actually shown a slight percentage decline.

The reason for this is not really known, but we can assume that the 1982/3 economic policy has been a large contributing factor.

3.2 Traditionally, we seem to lose approx 10 per cent of our members at the start of the new financial year, however as has been the case over previous years, the membership numbers always seem to increase around the middle part of the year.

A large portion of those members are in fact renewals from the past year.

3.3 At the time of writing this report however, the renewals are approx 15 per cent down on the trends for previous years. This is a serious situation, and it requires constant monitoring by the Divisions and the Executive office.

3.4 We must come to grips with the communication to our members, particularly the out- lying member.

3.5 There have been many instances where members have noted that the only benefit they receive from the WIA is a monthly magazine. We all know that this is quite incorrect, but we need to actively pursue the matter.

4.0 OFFICE AND STAFF

4.1 We have seen a tremendous effort by our staff in the past year, operating under extreme difficulties at times, in spite of this, the office continues to provide the service expected of it.

4.8 The facts of the matter are simply that we cannot afford to employ further full time staff without a substantial increase in membership, and a complete re-organisation of the admin-

istration system, yet the existing membership is creating greater demands for services.

4.10 Our new EDP office worker replacement for Mr Wyck Perry, has been fairly smooth, but it is a costly exercise. The current EDP system contains a large proportion of manual labor, and is now grossly out of date for current demands and membership requirements.

5.0 JOINT MEETINGS, WIA/DOC

5.1 Four joint meetings were held during the year. The minutes of same have been distributed to all councillors.

5.2 The current Executive has been able to continue the excellent relations with our DOC representatives, that were established over previous years.

5.3 The WIA is seen as a strong and efficient body.

5.6 We are most fortunate that our negotiators are men of a substantial business background, and have a very good idea as to how far a particular policy should be pushed.

5.7 I am pleased therefore to report that there have been many instances this past year of successful negotiations (see also item 2.9 in this report).

5.8 These have all been reported in AR and Divisional notes from time to time, so there is no need to repeat same here again.

6.0 CONCLUSION:

6.1 I would like to thank my fellow Executive officers for their excellent support, during what could only be described as a "difficult" year.

6.3 We have much work to be done, let us do it, together and in harmony.

Signed Bruce R Bathols, VK3UV, Federal President 1983.

APPENDIX 2

Attendance at Executive Meetings from 19th May, 1983 to 5th April 1984 inclusive.

	Attended	Maximum No Possible
Mr B Bathols	12	13
Mr P Wolfenden*	5	13
Mr C Scott	12	13
Mr E Russell	12	13
Mr K Seddon	13	13
Mr W Rice	12	13
Mr G Sones	7	13
Mr A Foxcroft	12	13
Mr J O'Shannassy	12	13
Dr D Wardlaw	12	13

Also attended:

Mr R Macey	13
Mr A Noble	1
Mr D McNiel	1
Mr D Clarke	1
Mr W Wilson	1
Mr R Burstal	4

**granted leave of absence from November, 1983*

AR

NZART representatives at the Federal Convention. Left Don ZL3RW/VK3BXF, NZART President and Craig ZL3TLB, Technical Editor of "Break-In" magazine.

APPENDIX 1

Membership statistics. All statistics are to 31st December, 1983 (previous years in brackets). DOC Statistics (as supplied to WIA) refer to licences issued, where WIA statistics refer to individual amateurs.

TABLE 1

	Total Licences DOC		WIA Licensees		% members to total Licensees	Other WIA members		Total WIA members	
VK1	321	(324)	197	(209)	61	30	(35)	225	(244)
VK2	4582	(4478)	2194	(2065)	48	145	(175)	2339	(2240)
VK3	4447	(4138)	2106	(2063)	47	286	(283)	2392	(2346)
VK4	2402	(2303)	1284	(1327)	53	81	(102)	1365	(1435)
VK5	1875	(1784)	1047	(1052)	56	92	(135)	1139	(1187)
VK6	1291	(1226)	689	(729)	53	67	(66)	754	(795)
VK7	534	(478)	322	(298)	60	15	(25)	337	(323)
TOTALS:	15452	(14716)	7839	(7743)	50 (53)	716	(827)	8551	(8570)

TABLE 2

Number of Clubs included in above were:-
VK1 – 3; VK2 – 29; VK3 – 33; VK4 – 26; VK5 – 15;
VK6 – 8; VK7 –

TABLE 3

TABLE 4

Percentage increases/decreases (31/12/83 compared with 31/12/82):-

	DOC Licences %	WIA Licences %	Total WIA members %
VK1	−1	−6	−8
VK2	+2	+6	+5
VK3	+7	+2	+2
VK4	+4	−3	−5
VK5	+5	−1	−4
VK6	+5	−6	−5
VK7	+10	+8	+4
TOTAL:	+5	+1	−1

TABLE 5

DOC Licences by Grade 31/12/82 to 31/12/83

	Full	Limited	Novice	Combined	Totals
VK1	179 (172)	61 (64)	59 (68)	22 (20)	267 (324) −
VK2	2510 (2411)	799 (794)	1023 (1030)	250 (237)	4582 (4478) +
VK3	2281 (2098)	1015 (930)	882 (1095)	269 (231)	4447 (4138) +
VK4	1255 (1165)	323 (319)	631 (618)	193 (181)	2402 (2283) +
VK5	1029 (996)	291 (276)	428 (435)	127 (120)	1875 (1789) +
VK6	796 (751)	182 (178)	240 (265)	73 (68)	1291 (1226) +
VK7	320 (272)	102 (99)	82 (83)	30 (29)	534 (478) +
TOTALS:	8370 (7865)	2773 (2660)	3345 (3305)	964 (886)	15398 (14716)

TABLE 6

WIA members by Grade:

	F/C	A/T	S	G	L	X	CLUBS	
VK1	177	24	9	3	3	6	3	225
VK2	1791	154	25	8	8	68	29	2339
VK3	1705	261	51	19	19	79	33	2392
VK4	1083	85	7	7	7	42	26	1365
VK5	860	106	17	7	7	18	15	1139
VK6	582	60	11	6	6	29	8	754
VK7	269	21	9	4	4	4	–	337
TOTAL:	6467	711	129	830	54	246	114	8551

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See review in ARA – Vol 6, Issue 3

NARROW BAND MODES

The following policy statement was agreed to by the 48th Annual Federal Convention, and relates to Narrow Band Modes (other than CW).

It is published with the aim of amplifying the Gentleman's Agreement WIA Band Plan for narrow band modes usage and to enhance amateur awareness and understanding of these modes.

The band plan and standards contained in the Policy Statement are recommendations only and are, therefore, a Gentleman's Agreement.

Recommended standards for Packet Radio are under consideration by a Federal Technical Advisory Committee sub-committee and details will be published in due course.

Reference should also be made to the notes following the Policy Statement.

POLICY STATEMENT

NARROW BAND MODES – ASCII, BAUDOT (RTTY) AND AMTOR (ARQ/FEC)

Considering:

1) AOCP and LAOCP minimum requirement for narrow band mode transmission.
2) The desirability of agreed calling frequencies and frequency allocations for such transmissions.
3) The different types of store and forward repeaters being developed.
4) The different types of narrow band modes in use and being developed.
5) The increasing number of narrow band mode users.
6) The need for agreed technical and other standards.

The Federal Council makes the following recommendations:

Technical:

1) Types of emissions used shall be F1 (frequency shift keying), and A2 and F2 (audio frequency shift keying) using a frequency shift of not more than 850 Hz. In addition, the occupied bandwidth of A2 and F2 emissions shall be confined within the limits of ± 3 KHz.
2) The following international standard codes shall be used:

BAUDOT (RTTY)	CCITT2
SITOR/AMTOR	CCIR
ASCII	CCITT5

or any other internationally recognised code
NB THE ABOVE POINTS 1) AND 2) ARE MANDATORY, AS PER THE REGULATIONS

3) The standard shifts commonly used are:
170 Hz 425 Hz 850 Hz
The *recommended* shift for amateur usage is 170 Hz.
4) The standard tone pairs commonly used are:

	Low Tones		High Tones	
Shift	Mark	Space	Mark	Space
170	1275	1445	2125	2295
425	1275	1700	2125	2550
850	1275	2125	2125	2975

It is *recommended* that amateurs use the above tone pairs for their transmissions. On HF the use of either high or low tones will be governed by the individuals choice and the pass-band of the transmit filter. On VHF FM, it is *recommended* that high tones be used to avoid incompatability.
5) The standard transmission speeds (Baud rates) commonly used are:
AMTOR – 100
BAUDOT – 45 50 57 75 100
ASCII – 110 150 300 upwards
It is *recommended* that the following speeds be used for MF and HF transmissions:
AMTOR – 100
BAUDOT – 50
ASCII – 110
6) The standard formats commonly used, and *recommended,* are:
AMTOR 7 unit code (synchronous)
BAUDOT 7.5 unit code (1 start, 5 data, 1.5 stop)
ASCII (110 Baud) 10 unit code (1 start, 7 data, 2 stop)
ASCII (300 Baud up) 9 unit code (1 start, 7 data, 1 stop)

Operational:

The following frequency segments and calling frequencies are *recommended* for use on the various amateur bands:

Band	Segment (MHz)	Calling Frequency (MHz)
160m	1.825-1.835	1.825
80m	3.620-3.640	3.630
40m	7.040-7.060	7.045
30m	10.140-10.150	10.140
20m	14.070-14.110	14.090
17m	18.100-18.110	18.100
15m	21.075-21.125	21.090
12m	24.920-24.930	24.920
10m	28.050-28.150	28.090
6m	52.080-52.100	52.080
2m(AFSK)	various	146.600
2m(FSK)	various	144.075
70cm	various	432.075

General:

1) Technical and operational standards and practices should be researched and promulgated for the benefit of existing and future users of these modes, and as part of an awareness programme for the benefit of non-users.
2) Band plans and standards for these modes should be published in each and every edition of the WIA Call-Book.
3) Regulatory requirements for all narrow band modes, as well as for store and forward repeaters should be researched, and amendments suggested where necessary.

Notes:

1) 3.620-3.625 MHz should, where possible, be used for DX working and Divisional/RTTY Group broadcasts only.
2) 10.141.5 ± 4 KHz should be avoided till further notice, and 10.145 MHz should be used as the interim calling frequency.
3) The international propagation beacon frequency of 14.100 ± 2 kHz should be avoided where possible.
4) 18.105 MHz should be avoided till further notice.
5) Speeds of greater than 300 Baud should be avoided on MF or HF.
6) There are a number of dedicated VHF/UHF repeaters for narrow band modes.
7) RTTY audio tones fed into an SSB transceiver produce FSK RF output, and the same tones fed into an FM or AM transceiver produce AFSK RF output.

QSP

SCOTTISH SEMICONDUCTOR TO TREBLE OUTPUT

A $150 million investment at the Greenock, Scotland, plant of US electronics giant National Semiconductor will treble output of semiconductor wafers — the first vital stage in the manufacture of silicon chips — at a time when worldwide demand is exceeding supply.

The Greenock plant, set up at a cost of $1125 million, is the only national semiconductor plant outside the US producing semiconductor wafers. Output at the plant will reach 500 000 wafers in 1984, and this will triple by 1989. Production facilities will be doubled and factory space increased to 30 000 square metres to cope with the expansion.

Investment in equipment using the latest-available technology will enable the Scottish plant to be the world's first large-scale producer of 153 mm wafers giving more than double the number of chips than the 102 mm wafers, currently regarded as the industry standard. The equipment will also enable the Greenock facility to produce wafers with significantly less rejected chips per wafer than the industry norm.

from News from Britain — 5th April, 1984

NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

BELLS ON LINE

This month's topic is the decibel, a commonly used but improperly understood unit. It is a unit of ratio and is in fact 1/10 of the basic unit, the Bel. The Bel is of course named after Alexander Graham Bell, the inventor of that device for interrupting meetings, TV dramas and a good night's sleep, and was used often in relation to describing attenuation on telephone lines.

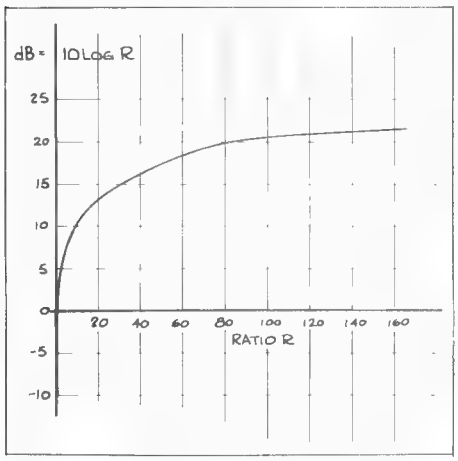

Fig 1 — Logarithmic Response
The limiting effect of a logarithmic response is obvious. Note that the curve stays to the right of the vertical axis. A logarithmic response is non-linear but is still mathematically precise.

The ear is essentially logarithmic in its response as are a number of human senses. This permits a much greater dynamic range without resorting to enormous resolution and makes overload or damage less likely (see Fig 1). Thus the minimum perceptible change in sound intensity that the ear can perceive is roughly proportional to the intensity of sound already present. As the main use for the telephone was to convey the spoken word it was convenient to develop measures that corresponded closely with perceived sound levels. Unfortunately the size of the Bel, like the Farad, proved to be too big for normal engineering applications. So the decibel became the unit, to the horror of some pedants.

The definition of the decibel (dB) is: Number of dB = 10 log ($P1/P2$) where P1 and P2 are the two power levels being compared, say the output power from a transmission line and the input to that line respectively.

Thus if the ratio is 0.5 the number of dB is -3.01 or a loss of 3 dB. Similarly a ratio of 2 is a gain of 3 dB and a ratio of 10 is 10 dB. It should be noted that except for very precise measurements, ratios of 2 or 4 etc, are taken to be 3 dB, 6 dB etc. Table 1 lists the number of dB for a range of ratios.

RATIOS

dB	POWER $P1/P2$	VOLTAGE $V1/V2$
-40	0.0001	0.01
-30	0.001	0.032
-20	0.01	0.10
-10	0.10	0.32
-9.0	0.126	0.35
-6.0	0.25	0.50
-3.0	0.50	0.71
-2.0	0.63	0.79
-1.0	0.79	0.89
0.0	1.00	1.00
1.0	1.26	1.12
2.0	1.58	1.26
3.0	2.00	1.41
4.0	2.51	1.58
5.0	3.16	1.78
6.0	3.98	2.00
9.0	7.94	2.81
10	10.0	3.16
12	15.8	3.98
20	100	10.0
30	1000	31.6
40	10000	100
50	10^5	316
60	10^6	1000
100	10^{10}	10^5
120	10^{12}	10^6

Table 1. Tabulation of dB Ratios
Note that 10^6 means 1 followed by six zeros, thus 10^6 = 1 000 000 or one million.

Provided measurements are conducted with equal input and output resistances (or reactances as the case may be) then voltages or currents may be used to calculate dB of gain or loss if a different formula is used. For equal resistances $P1 = V1^2/R$ and $P2 = V2^2/R$. Now your maths may be a little rusty but you probably recognise that the squared term can be taken out of the bracket if substitutions are made for the powers. Thus the formula becomes:

Number of dB = 20 log ($V1/V2$)
where V1 and V2 are the voltage levels to be compared
or number of dB = 20 log ($I1/I2$)
where I1 and I2 are the current levels to be compared.

For amateur radio the dB is commonly used to express the loss of feedlines in dB/metre, or the gain of a preamplifier, to name two legitimate uses. If we were to measure the -3 dB frequencies of the preamplifier we would be measuring the frequencies where the power gain had fallen to 50 percent, or the output voltage had fallen to 70.7 percent, of the maximum value.

It is also legitimate to describe antenna gains in dB providing the reference antenna is stated and both are matched to the same impedance. Most antenna manufacturers refer their gains to the hypothetical isotropic radiator, thereby gaining 2.14 dB more than they would have compared to a dipole. (The isotropic radiator is an antenna that radiates uniformly in all directions — its radiation pattern is a sphere).

Another legitimate use of the dB is in describing the noise figure of an amplifier. This is the ratio of the noise produced by the device to the noise produced by a resistor. So an amplifier with a noise figure of 6 dB operating in a 50 ohm system produces four times as much noise power or twice the noise voltage as a 50 ohm resistor connected in its place. A noiseless amplifier would have a noise figure of 0 dB. Because of the external noise a noise figure of 6 dB is probably adequate for HF. For some VHF/UHF work a noise figure of less than 1 dB is most desirable. These figures refer to a reference resistor at 17° C. Very low noise figure devices have noise powers equal to that of resistors at very cold temperatures.

For example, an amplifier operated at -196° C in liquid nitrogen may have a noise figure equivalent to a resistor at -100° C or 173° K. It would be described as having an effective input noise temperature of 173° K. But I digress; back to dB.

Another use of dB is when specifying a level. As we must have a reference for P1 to have a meaningful ratio the level has this incorporated in the unit. For example, 10 dBm means a signal of 10 dB above 1 milliwatt. It is important to know the impedance if powers are determined by voltage measurements as is often the case.

You may also come across the term dBW which refers to the level compared to 1 W. Thus +20 dBW is 100 W.

As an exercise you might like to prove that 1 μV in a 50 ohm system is -107 dBm. Or you might like to check that 0 dBm is 0.775 V in a 600 ohm system. Can you guess what -3 dBV would be? (0.707 V).

A more controversial use of the dB is in relation to signal strength or more precisely in relation to "S" meter readings. It has been suggested that S9 be taken as 50 μV in a 50 ohm system at the receiver input terminal. Thus 20 dB over 9 should be equivalent to 500 μV and 40 dB over 9 to 5 mV. A 5 mV signal might be audible on a good crystal set!

Of course for a uniform scale it would be necessary for the AGC to be close to logarithmic in response. Many of the older valve receivers did give such a response but few solid-state receivers do. Certainly most manufacturers set the S meter to read 9 for 50 μV input on 14 MHz but the resemblance between indicated dB and the real thing is purely coincidental.

This is not a new problem for didn't Shakespeare say, through Hamlet, *"dB or not dB, that is the question!"* Undoubtedly S meters worried him too. **AR**

MURPHY

Apologies to all from Murphy for the mistake which appeared on p16 in June. The calculation should have read C = 1/(2πfoR)

ICOM

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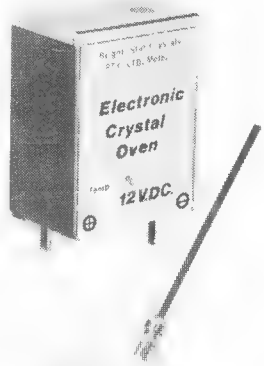

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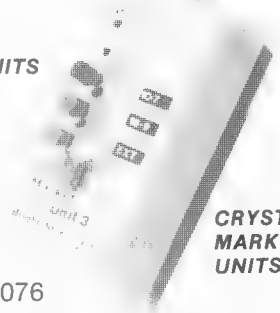

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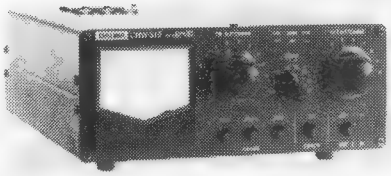
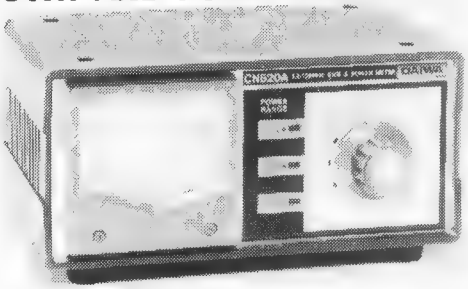
ANTENNA TUNERS



	CNW-219	CNW-419	CNW-518	CL-880
FREQUENCY	3.5-30MHz (8 bands)	1.8-30MHz (Continuous coverage 17 bands)	3.5-30MHz (8 bands)	1.8-30 Mhz (Continuous coverage 17 bands)
POWER RATING	100W CW	200W CW (3.5-30MHz) 100W CW (1.8-3.4MHz)	1kW CW (50% duty)	200W CW (3.5-28 MHZ) 100W CW (1.8-3.4 MHZ)
INPUT IMPEDANCE				
OUTPUT IMPEDANCE	10-250 ohm		10-250/25-100 ohm (on 3.5MHz)	10-250 OHM
SWR				
METERING RANGE	20/100W	20/200W	20/200/1kW	No Meter
DIMENSIONS (W × H × D mm)	225 × 90 × 245		225 × 90 × 275	165x75x95

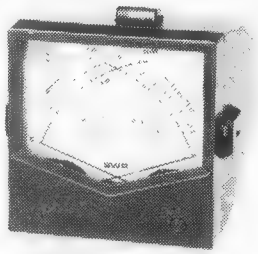
SWR AND POWER METERS

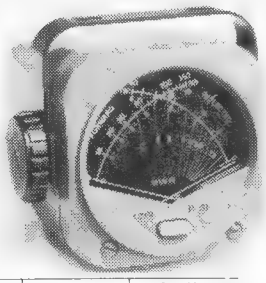


		CN-620A (B)	CN-650
FREQUENCY		50MHz	1.2-2.5GHz
INPUT/OUTPUT IMPEDANCE			
POWER	FWD	20/200/1kW (2kW)	2/20W
	REF	4/40/200W (400W)	0.4/4W
SWR DETECTION SENSITIVITY		4W min	0.4W min
TOLERANCE (full scale)		± 10%	± 15%
CONNECTORS		-239	N type
DIMENSIONS (W × H × D mm)			

Compact Size Cross Needle Meters

	CN-520	CN-540	CN-550
FREQUENCY	1.8 60MHz	50 150MHz	144 250MHz
POWER RANGE	200/2kW	20/200W	
IMPEDANCE			
METER ACCURANCY			
CONNECTORS	SO - 239		
DIMENSIONS (W × H × D mm)			

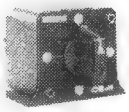




NEW MOBILE METERS

	CN-410M	CN-460M
Frequency	15-150MHz	140-450MHz
Input output impedance	50 OHM	
Ratio of Forward vs Reflected power	3:1	
Power range Forward Reflected	15W 150W 5W 50W	15W 150W 5W 50W
Tolerance	±(15% AT FULL SCALE	
SWR measurement	1.1-1.0	
SWR detection sensitivity		
Input output connectors	SO-239(type M)	SO-239(type M)
Dimensions	71W x 78H x 100D	

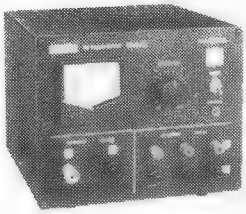
Coaxial Switches

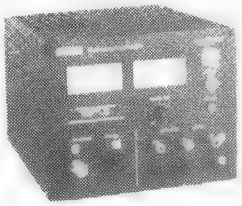


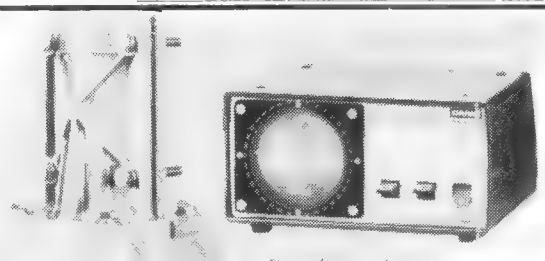
	CS-201/CS-201N	CS-401	CS-4
FREQUENCY	600MHz	800MHz	1500MHz
VSWR	below 1.2		
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW
IMPEDANCE	50 ohm		
INSERTION LOSS	Less than 0.2dB		
ISOLATION	better than 50dB at 60MHz better than 45dB at 45 MHz adjacent terminal		better than 60dB
CONNECTORS	SO 239 (N type)	SO-239	BNC
OUTPUT PORT	2	4	4

*Unused terminals grounded

POWER SUPPLIES







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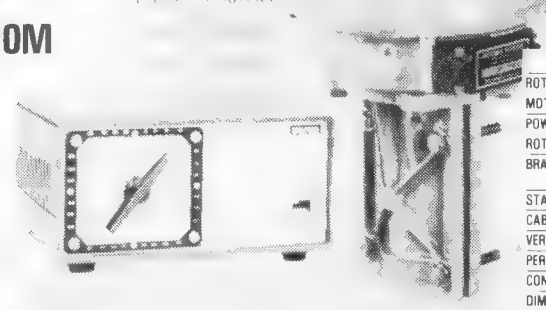

	DR-7500R/X	DR-7600R/X
ROTATION TORQUE	500kg-m	600kg-m
MOTOR	24V A	
POWER SOURCE	220V AC	
ROTATION TIME (50/60Hz)	[illegible]	[illegible]
BRAKE	Mechanical	Mechanical & electrical
STATIONARY BRAKING TORQUE	2000kg-cm	4000kg-cm
CABLE TO BE USED	6 core conductor cable	
VERTICAL LOAD	200kg	
PERMISSIBLE MAST SIZE	48 - [illegible]	
CONTROLLER		
DIMENSIONS (W × H × D m/m)	180 × 85 × 120	

PACKET RADIO

David Furst, VK3YDF
131 Church Street, Hawthorn, Vic. 3122

This month we have pleasure in introducing and welcoming a new Contributing Editor, David Furst VK3YDF. Bi-monthly David will explain a very new concept to amateur radio — Packet Radio. This first column explains getting started with Packet Radio and the equipment needed.

PACKET RADIO — THE HARDWARE

Packet Radio (as described page 23, May AR) can be accomplished in a few ways. This month's article will discuss the ways in which this can be done.

To connect a computer to a transceiver and achieve the performance and advantages of Packet Radio there must be a certain level of sophistication.

This sophistication allows a system where information is transferred at speeds of 1200 Baud (1200 bits of information per second), and many people may use the same channel effectively and simultaneously. Communications will be TOTALLY ERROR FREE and other services may be accessed such as computers, satellite links etc via 'gateway' stations.

To look after this process we need an INTELLIGENT link between our transceiver and our home computer.

One of the methods that has been used with limited success is to load a personal computer with large amounts of very intelligent programmes and ask these programmes to do the job. But this doesn't work very well because the computer is full to the brim with programmes and hasn't space for more. It is so busy that it has time for nothing else. Result: A rather expensive home computer has become dedicated to the task of Packet Radio and the only way to do anything tricky at all is to go out, get another one, and use it to command the first one.

This leaves the alternative of dedicated controllers to look after the Packet Radio link. A smart device that will leave the computer free to do more interesting things — such as running a Bulletin Board service, having the facility to send programmes to other people, receiving programmes others have written and storing them for later use, operating a gateway where RTTY people can talk to the Packet Radio Network or perhaps a gateway to the Packet Radio satellite that has been launched.

The official term for a Packet Radio controller is TNC. It stands for Terminal Node Controller — because any station in the network is a node where information ends up.

TNC's ARE PRESENTLY BEING BUILT IN TWO DIFFERENT WAYS.

The first method is somewhat similar to the above where a computer is doing everything with the programmes performing all the functions. This is cheap for a manufacturer to build, but the computer is so busy that it will not be able to look after transmitting and receiving information at the same time. The Packet Radio format of sending information (called the 'PROTOCOL') is such that this won't cause errors, however information will have to be retransmitted by the other station quite often. Apart from slowing things down, it also jams up the channel. It is generally considered that the disadvantages of this method are not worth the relatively small price advantage.

There is only one (commercial) TNC implemented this way and the manufacturer doesn't let people see his programmes, so it's impossible to modify them in order to alter or upgrade the Protocol or the operation of the TNC.

The final and preferred method is to use programmes where appropriate and to use extra silicon chips to do what they do best. This way neither has to bear the entire brunt of the work required to make Packet Radio function.

These boards (there are two) have much in common. For the sake of convenience we will discuss their components in the order in which information passes through them on its way from the computer to the radio.

Most computers have a serial port and this is what the TNC is connected to. The first chip inside the TNC that information passes through is the serial chip — this converts the serial information into the parallel mode used inside all computers.

Next there is a combination of the Central Processing unit (or brain of the machine), the programmable read only memory chips (PROM's — or where we store the programmes) and the random access memory chips (RAM's — temporary storage). This combination of circuitry and programmes is where all the computing involved in Packet Radio actually happens.

The final part of what is strictly defined as the TNC is the High Level Data Link Protocol Chip. This device takes the parallel information fed to it and converts it into a serial string. The fancy name is because the conversion is to a widely standardised format designed especially for moving information. It provides starting characters, addresses, error checking and ending characters. This chip is what 'packages' the information into packets.

At this point the information is still represented in a way that a radio cannot use. A special modem is the final part of the total TNC and its job is to change those ones and zeros into audio tones that can be successfully transmitted over a radio link.

There are other smaller circuits that won't be discussed in detail. They perform watch-dog functions, translate levels or voltages, provide synchronising signals etc.

In selecting a TNC there are other things that must be considered. The processor used should belong to a family which is used in many personal computers and with which many people are familiar. It should be well supported with assemblers, operating systems etc. This allows easy modification of the programmes as Packet Radio develops. The programmes should be available as written in original form and they should not have to be cross assembled on another 'host' computer.

Photograph by Ken McLachlan VK3AH

DAVID FURST VK3YDF

The TNC should allow the two existing protocols to be used, and preferably the new Vancouver V2 protocol also.

None of the TNC's available at the present time satisfy all the above requirements, however the TNC from the Vancouver Amateur Digital Communications Group (VADCG) has all but one and can easily be modified to provide that.

In order to standardise on the best TNC available both the Sydney and Melbourne Packet Radio groups have opened channels to Vancouver and can arrange purchasing on behalf of Australian amateurs. The Sydney Group has designed an improved radio modem to suit this TNC and a design for a Vancouver compatible Australian TNC is presently in the prototyping stage.

Should you have any enquiries please address them to: Sydney — SADCG, PO Box 231, French's Forest, NSW. 2086. Melbourne — MPRG, C/o David Furst VK3YDF, Phone (03) 428-5392.

QSP

COMPUTER PROGRAMMES

The transmission over the air of copyright computer programmes is illegal. A Rochdale-based software company told the RSGB that it planned to take legal action against eight licensed amateurs for copyright infringement. The transmission of programmes written by individual amateurs is quite legal.

from RSGB News Bulletin — No 6

This may be relevant under new Australian legislation — Editor.

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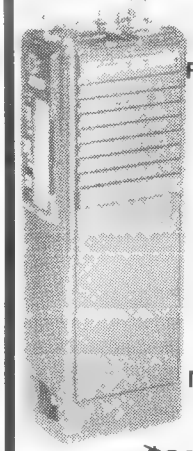

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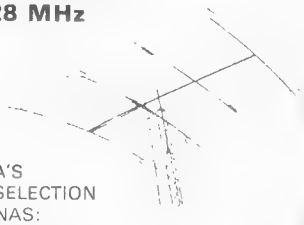

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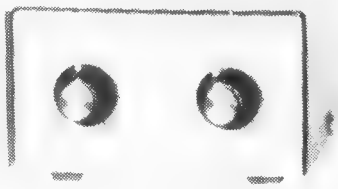

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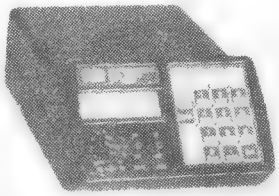

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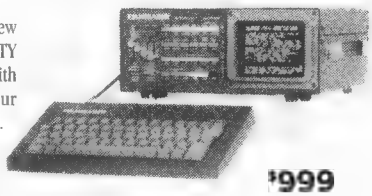

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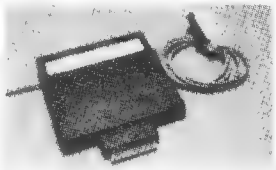

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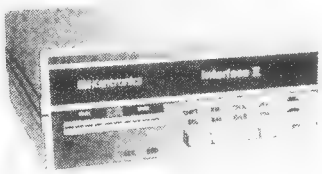

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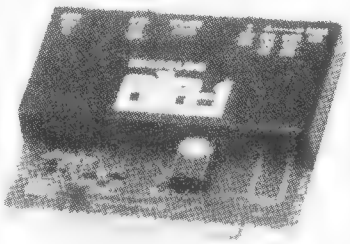
MICROLOG-AIR-1



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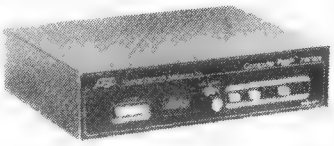

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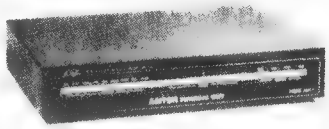

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50.945	ZS1SIX	South Africa
51.020	ZL1UHF	Auckland
52.033	P29SIX	New Guinea
52.150	VK0CK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHF	Christchurch
52.320	VK6RTT	Carnarvon
52.325	VK2RHV	Newcastle
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Mount Lofty
52.465	VK6RTW	Albany
52.470	VK7RNT	Launceston
52.490	ZL2SIX	Blenheim
52.510	ZL2MHF	Mount Climie
144.019	VK6RBS	Busselton
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Ballarat
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton

144/432 MHz NEWS

A letter with somewhat familiar writing arrived recently, turning it over I noticed Mark VK5AVQ as the sender. Now Mark does not usually write to me unless it's very important or he wants something (!) because the phone is closer and costs less. On opening the envelope it was indeed something to read as Mark has provided me with an insight to the good openings on 144 and 432 MHz on the 28th, 29th and 30th April, when I was absent for most of the time!

Mark writes: *"I would have to rate the superb openings on 2m/70cm from 28/4 to 30/4 as amongst the best openings for a couple of years. The slow moving high over southern Australia was the cause. VK5ZDR and VK5RO worked many VK3's while VK5ZRO had a QSO into Melbourne."*

"Here is how I saw things: Saturday 28/4 about 1100 UTC heard VK5MC at 5x9 at my QTH, and you know how bad that is, but I could only listen briefly so no QSO's."

"Sunday 29/4: went up to Crafers to 'tweek' the 70cm repeater pre-amp and Ch 7 on Mt William was rock solid on K2A hand-held with rubber duck aerial; with an outside aerial I worked Rex VK3VL at 0400 via Ch 7 using 100mW. Oh for a QTH like that, but with our Ch 8 repeater right next to me it was not easy receiving. I headed home leaving the DX behind, and did not expect to work anything through the 40dB hill, but I was wrong:"

"29/4- 0620 VK3XX Gordon 5x2, then VK3ZBJ Les 5x 6; 1023 VK3UM Doug 5x9+ with 400W both ways; 1040 VK5ZBJ 5x4. These and others were also worked by VK5ZDR, VK5RO, VK5ZRO and some others."

"With this amount of SSB activity I decided to check out the repeaters. Rather surprisingly Ch 7 Mt William was weak but Ch 3 Ballarat was S9 while Ch 5 Mt Macedon was also audible under our Ch 5. At 1215 via Ch 3 Ballarat worked Arthur VK7SE, VK7KMF, VK3KVH, VK3NK all in a round table type QSO. The VK7's were located on Tasmania's north west coast with VK7SE almost Q5 on direct."

"The following shows the extent of the opening: 1230 UTC It appeared while working VK7SE, VK5ADC through Ballarat, that in fact Don VK5ADC and myself were hearing the interstate stations via Ch 3 Ballarat but they were hearing us through Ch 3 Ulverstone in NW Tasmania. In Adelaide Ch 3 Ballarat was much stronger than Ulverstone but either Ballarat is deaf or one way conditions occurred. Morris VK3XDW also worked Ulverstone repeater which was 5x5 under Ballarat 5x9!"

"It is sad to note that not one VK7 was worked from VK5 (Adelaide) on 2 metres SSB, all the VK7's I asked only had FM!"

"30/4: At 0000 UTC Mt Macedon 5x9 into Adelaide, while driving to work I could hear it breaking the mute on my mobile! One local mobile who was receiving it better than I, thought it was someone on direct who forgot his repeater offset. I guess it is time the old VK5LP war cry of more activity on 2 metres SSB was sounded again."

Thanks for writing Mark, at least you have broken the ice with your contacts. And your point regarding lack of signals under such conditions on 144.1 is also valid.

The VK5LP establishment certainly had some enhancement of signals but nothing like that which occurred on the Adelaide Plains. On 26/4 I did work Woody VK3AGD at 0810 and Maurie VK3BML/3 who was participating in the Lake Goldsmith Steam Rally, both through Mt William Ch 7 at 5x5. A number of other repeater contacts were available on 28/4 and 29/4, on the latter day I also worked Roy VK3AOS at 5x6. Despite the conditions very few signals were available to me and certainly nothing worth working from the Melbourne area. Most enhancement seems to have been confined to the coastal and near regions, which for me is a fairly typical situation.

HOW THE EAST FARED

An outline of how the previously mentioned enhanced conditions were observed in the eastern States comes in a letter from Gordon VK2ZAB, who mentions that being in Adelaide over Easter coupled with rather poor conditions early in April limited his observations on 2m and 70cm. His report therefore covers the tropo opening at the end of April and on 2m unless otherwise noted.

"During our schedule on Sunday 29/4 Doug VK3UM told of good signals between Melbourne and southern VK5 earlier that day. The weather pattern certainly looked promising, but apart from Geoff VK2EJJ in Wagga, no other distant out of Sydney signals were heard on the Sunday."

"On Monday 30/4 at 29/2313 UTC Bruce VK2FD in Orange was heard working Des VK5ZO but only pings were heard in Sydney. Various repeaters were heard to carry VK5 and VK7 signals but there were no direct contacts during the day. VK1VP was 5x9 + 20dB and VK1AU was 5x5 on 70cm."

"Monday evening VK2MQ in Moree, VK2AKU in Narrabri and VK2KAY in Gunnedah were all above average at 1030. At 1151 Rob VK3BHS in Stawell was 5x6 and 1158 Peter VK3XDP was 5x5 here. Wagga stations VK2KAW and VK2MW were working VK3's. Peter VK3ZYN near Geelong was one of them. At 1200 Trevor VK5ATD near Mt Gambier and John VK5DJ at Millicent were both 5x3 here."

"Several other VK5 and VK3 signals were heard at low level. No other contacts from this QTH were made. Sydney stations in evidence at these times included Steve VK2KWA, Neil VK2BKQ and Ross VK2ZRU. Northern NSW stations apart from the already mentioned included VK2EVB and VK2DGT both at Coffs Harbour and both 5x4. Trevor VK5ATD was still 5x3 in Sydney at 1346 and Rob VK3BHS 5x6 at 1450."

"Tuesday 1/5: In the evening VK2SW at Wagga, VK2DR Bathurst, VK2AKU Narrabri, VK2XDH in Uralla, VK2BDT Goulburn, VK2DFY Maitland, VK2BVW Bathurst and VK2KBK Wagga were all above average level in Sydney. VK2DR in Bathurst worked Doug VK3UM in Melbourne and not confirmed but believed VK3ZYW near Geelong. Rob VK3BHS in Stawell was again evident in Sydney at 5/2 from 1119 to 1243. He worked VK2BKQ and VK2ZAB."

"On Wednesday 2/5 northern NSW stations VK2MQ in Moree, VK2AKU at Narrabri and VK2KAY Gunnedah were again above average in Sydney. So was Doug VK3UM who was 5x4 at 1050. Unfortunately no contact was made between VK3UM and the northern VK2's, although VK2AKU heard meteor pings from Doug."

"The weather had changed by the weekend and the opening faded. Hoped for ZL signals never eventuated. At this QTH the even more hoped for VK7 signals never eventuated either. (Further bearing out the comments of Mark VK5AVQ!). However, VK4LC at Eagle Heights was 5x3 here on Saturday morning 4/2154 UTC."

Thanks again for your useful letter Gordon. Your reporting serves to keep the multitudes on their toes, because there are more signals around than had previously been given credit, but sustained operating such as yours and that of Doug VK3UM certainly helps to keep the bands active.

SIX AND TWO METRES STANDINGS

I mentioned last month about the need to have your information for the six metres standings on my desk by the 15th June and that still stands. However, any two metre listings are required by the 15th July for inclusion in the September issue.

I have been receiving some very abbreviated lists for six metres which are not acceptable in their present form. I need to have the full range of information so that should any checks be necessary then I have something to work on. The lists have been returned to the owners with a request for the full information.

The information I require: Your own call sign, date of contact, time in UTC, call sign of station worked, country, mode, signal reports both ways. QSL received yes/no. If QSO was split frequency then frequency of each party required; eg 52/50, 52/28 etc.

I repeat the two metres requirements here for sake of clarity: Your own call sign, date of contact, time in UTC, call sign of station worked, country worked other than Australia, mode, signal reports both ways, QSL received yes/no. Crossband contacts not counted. In addition, one contact per each Australian State VK1 to VK8 inclusive. eg If you have worked all Australian States and New Zealand this will count as 9 contacts. If you will support a two metres standings then we could consider a 70cm standings at a later date.

TASMANIA

At last some news has come from there. Joe VK7JG sends in his list of six metre stations and mentions that overall activity seems to be rather low (April) but there have been some good inversions between VK7 and VK3 but most activity seems to be on FM. (Refer VK5AVQ again!)

Joe mentions acquiring the 52, 144 and 432 MHz linears ex VK2BQJ and can now run up to 300 watts PEP on those bands, but lacks suitable antennas since moving 15 months ago. However, on 25/12/83 he worked several VK4's on 144.1 running 10W to a ¼ wave whip with the longest contact 2500km at VK4YLG. Not a bad effort!

Joe makes a plea for the phone numbers of some of the more active DX-ers so they may be alerted if the band is open, particularly in regard to 144 and 432 MHz activity. Many such contacts are missed because of the inability to raise someone at the other end in response to hearing a beacon or a repeater. Joe says he would not object to being called at any hour if the contact was worth it! To start the ball rolling Joe's number is 003 272 256.

MACQUARIE ISLAND —VK0AP

Peter Barclay, VK3FR, has written to say there are a number of amateurs who contacted Peter VK0AP on 18/12/82 while he was at Macquarie Island who have not sought a QSL card for the contact. Those involved are VK3s KAQ, DQJ, DFL, ZZX, AMH, AZY, AIY, AQR, AMQ, VK7ZIF, VK2's ZI, BHO, YOE and AWQ. On 18/6/83, VK3VD.

Peter VK3FR, 29 Woodcrest Road, Vermont, Vic. 3133, on receipt of a card either via the Bureau (preferred) or direct with a stamped self-addressed envelope, will be quite happy to confirm Peter's QSO.

Go to it chaps and get your confirmations. Seems hard to believe such QSL's are outstanding but then there is no accounting for people's interests!

While on the subject of Macquarie Island David VK0CK reports (20/5) that the temperature now hovers around 1°C and they have been surviving some very strong winds. No further contacts have been made on six metres since February but the Australian TV stations sound carriers are heard from time to time.

VK0CK HEARD IN JAPAN

Masa, JF2PYZ has forwarded a reception report on hearing the VK0CK beacon on 9/4/84 at 0730 UTC for 15 minutes, signals 319 to 419 on CW, on 52.150 MHz. Masa used a 4 el yagi to an IC551 . . . I gather that news caused some interest in JA!

SIX METRE NEWS

This band has gone quiet for the moment but by the time you read this we might have had some of the usual winter Es openings. However, through the March/April period we were treated to openings to JA on 4/3, 10/3, 17/3, 18/3, 21/3, 24/3, 29/3, 30/3, 31/3, 1/4, 7/4, 8/4 and 11/4, plus contacts to KH6 on 30/3, 31/3, 1/4 and 8/4, plus ZL on 7/3, 18/3, 29/3 and 8/4. All the above is occurring at a time of a low spot in the solar cycle.

Bob VK5ZRO said outstanding days for JA contacts were 18/3 with JA7, 8, 9 and 0 from 0210; 30/3 JA1, 2, 3, 4 and 6 from 1128 to 1350 with 41 contacts plus KH6IAA at 0740 at 5x7; 31/3 0338 to 0715 for 69 JA contacts with JA1, 2 and 3; same day 0220 KH6IAA, KH6FQ and KH6JIW; 1/4 0445 to 1115 JA1, 2, 3, 4, 5, 6, 7, 9, 0 for 69 contacts; Bob also had a RTTY contact with JH1WHS at 599 at 1035 for good measure! H44PT also in at 2310 on UTC day 31/3.

Bob also remarked on the widespread nature of the Es contacts almost on a day to day basis to some portion of VK. One good day in particular indicates how the Es shifted around eg 29/3: 1015 VK6RO, 1120 VK3AZY, 1128 VK2AKU, 1230 VK4FNQ, VK4KIT, then 1345 back to VK6ZPG. The fact that the Es was still around for the next two days allowed such good

openings to Japan and Hawaii because the Es brought their signals down to the southern States instead of it stopping in VK4 and VK2 as it often does.

Really a very thrilling time this last equinox and will help to keep the six metre fraternity on their toes for what, in other years, might have been seen to be a very poor period for six metre contacts.

WILLLIS IS OPENS TO JA

Graham VK9ZW, had a marvellous opening to JA on the 16th May. The band opened at 0838 UTC with a call to JM1WIN and continued with JA's 2, 3, 4, 6, 7 and 9 with reports given up to 5x9 both ways. The JA3's were the last to drop out at 0953. In all 42 contacts were made during this opening.

The Honiara beacon H44HIR on 50.005 MHz, was heard by Graham between 0730 and 0750 with strengths up to 5x2 on the 26th May also Graham has been using Oscar and 160 metres. He returned to the mainland on the 21st June.

Graham's replacement is Andy VK9ZA, who will also have an interest in 6 metres and Gil VK3AUI has lent him an amplifier to help him on this band. It is good to see the FT680, which was used on Heard Island and then donated to the Meteorological station by the VK6DX Chasers Club being put to such good use. QSL's for both stations go to VK6YL.

WORKED IN JAPAN

Bob VK6RO sent me some information from the Japanese CQ Ham Radio magazine which shows some good contacts are still being made from time to time in the northern hemisphere. eg 26/12 4D1GF; 31/12 VK2, 3, 5; 1/1 VS6XMT, VS6XLA, VS6XMQ; 3.1 ZL1, 2, DU1GF, VK2, 7; 11 1 VS6SIX (beacon) on 50.075; 13/1 VK2; 20/1 YC0FET; 21/1 ZL1, 2, 3, ZL7OY; 22/1 ZL2TPY; 29/1 ZL2AQR and ZL8AFH. That's as far as this copy goes, so it will be interesting to see what comes out in the April/May issues which will cover the period of our good contacts.

MOONBOUNCHE REPORT

From "The Propogator" May 1984, a report from Lyle VK2ALU on the VK2AMW EME station. With the installation of special low loss coax between the transmitter PA and dish feed horn they are now getting 130 watts output at the feed port on 1296.

"A special power supply unit was constructed for the GAT66 receive pre-amplifier, which was then installed at the feed horn in place of the W6PO preamp. After experimenting with various preamp and postamp combinations, a relatively low noise bipolar postamplifier was used to follow the GasFET preamp with about 1.5dB of coax between them for stability."

"A number of EME tests were arranged with VK2AMW by stations in USA and Europe for 8/4/84, but strong wind on the day caused uncontrollable dish movement of approx 4 degrees during the first portion of the sked. No contacts were made with USA stations, though K2UYH and ZL3AAD were heard briefly. Later in the day the wind dropped and our own echoes were heard at up to 8dB above noise. OE5JFL was then heard calling VK2AMW and a contact followed at a good O/O signal strength. He was then requested to try SSB and was copied at 4x4, thus becoming the first SSB signal heard via the moon at VK2AMW. OE9XXI was then worked, O/O copy, as was LX1DB and DJ8QL, who was also requested to try SSB and was copied at 3x3."

"The day concluded with an unexpected contact with VK5MC, who was not as strong as the European stations, but copied us quite well to provide an M/O level contact. This was the first 1296 MHz EME contact between two stations in Australia and completed the fully EME WAC for VK2AMW, partly completed on 432 MHz and partly on 1296 MHz." Congratulations to Lyle and his helpers.

ODDMENTS

From the April issue of "Break-In" a few interesting small items mainly submitted by ZL1HV.

GOING BACKWARDS: Zimbabwe has cancelled its reciprocal licensing agreement with the UK.

IT'S NOT ALL GAIN: Belgian amateurs are threatened with severe restrictions on their VHF/UHF SHF bands. Thirty watts maximum power on 2m and 70cm; 434 or 435 to 440 MHz only; 1.2, 2.4 and 4.6 GHz bands withdrawn; 15 watts FM permitted over the whole of their 2 metre band and, 144 to 146MHz.

SYLEDIS: Aren't we lucky not to have this radio navigation system around here? Extensively used in Europe it operates on 432.144, 432.303, 432.383, 432.463, 432.513 and 432.563.

LEISURELY COMMUNICATIONS: Anybody with plenty of time to spare might like to consider a QSO with Pioneer 10 which has now left the solar system. It now takes nine hours for a signal to reach it. NASA hopes to track Pioneer for at least another five years.

RELATIVITY: Had air fares fallen at the same rate as computing power it would now be possible to fly to Sydney for one cent.

INFLATION PROOF: You can still use a one cent piece as a screwdriver.

DOES THIS SOUND FAMILIAR?: This is a story about four people, Everybody, Somebody, Anybody and Nobody.

There was an important job to be done and Everybody was asked to do it. Everybody was sure that Somebody would do it. Anybody could have done it but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought that Anybody could do it and Nobody realised that Everybody wouldn't do it. It ended up Everybody blamed Somebody when actually Nobody blamed Anybody. Does this sound familiar?

After tangling with that it seems appropriate that the column be closed for this month, as there seems to be no other news of importance! Thought for the month: "The world is blessed most by men and women who do things and not by those who merely talk about them." 73. The Voice in the Hills.

PS I understand Gil VK3AUI will be relinquishing the reins as Editor of "Amateur Radio" about this time. I would like to thank him for a job well done and in a manner showing consideration for others, it has been a very happy association for me. I look forward to another happy association with Gil's successor . . . 5LP. **AR**

BOOK REVIEW

Ron Cook, VK3AFW
TECHNICAL EDITOR

RADIO EXPERIMENTER'S HANDBOOK

This is an interesting publication containing full details of some twenty four construction articles covering the topics of antennas, measuring and testing equipment, amplifiers and receivers and radio teletype. Most of these articles have previously appeared in that other journal, Electronics Australia International. Anyone who has a complete set of ETI need not pay much attention from here on but for those of us who do not regularly obtain ETI here is an opportunity to economically obtain a good collection of useful circuits.

As is usual with ETI construction articles there is a brief rundown on the theory as well as a thorough description of the construction details. It is worth buying for the section on VHF power amplifiers alone. For the beginner there is a good section on short wave listening and a simple two transistor receiver. Printed circuit track patterns are given at the rear of the book.

Perhaps you might be interested in a simple but effective signal generator for aligning the receiver or a VSWR and power meter for the transmitter. For those with a computer and a small backyard (does anyone have a backyard that is too big?) there is an article and computer programme for designing loaded trap dipoles.

For those with an experimental bent any book edited by Roger Harrison is worth a second look. This one is no exception.

Available in soft cover from your newsagent for $7.95. **AR**

NOVICE COURSE KIT

The NSW Division has for some time been providing a kit designed to enable any enthusiast to learn in his own home at his own speed the theory and Morse necessary for a pass in the Novice Radio Amateur's exam. The new revised kit consists of several books and two cassette tapes.

The books are:

- *Amateur Operator's Handbook (contains all the regulations)*
- *Novice Electronics (covers all the theory)*
- *1000 Questions (typical novice exam questions with answers)*
- *Learning Morse Code (accompanies the cassettes)*
- *Into Electronics*
- *The Novice Kit Handbook*

The changes to the kit include the new publications "Into Electronics" and the DOC Handbook. The first kits were issued in 1978 and have proved very popular since. The revised kit is even better.

"The Novice Kit Handbook" packs a lot of sound advice into its ten pages as well as giving guidance on using the kit. In addition to the study programme, and approach to the exam, it includes nearly four pages of useful addresses.

"Learning Morse Code" spends eight pages leading up to actually learning Morse code using the two cassettes. All the important information on the cassettes is reproduced in this booklet, for example it gives the text of all the practice Morse. Much additional information on sending and receiving Morse is included, such as the correct way to hold a key. Three practice oscillator circuits are included along with circuits for a simple transmitter and a simple receiver — both suitable for the beginner.

"Into Electronics" is an excellent and very elementary introduction into electronics/electrical engineering at a level suitable for a bright ten year old. It would be a most suitable book to use as a means of testing the interest of any youngster; it could also be usefully read by more mature persons, eg the YF or OM wondering about retirement.

"Novice Electronics" is a chubby volume for the person seriously attempting their Novice licence exam. It commences at the level achieved by the understanding reader of the previous volume and continues up to examination standard.

Practice for the exam is an important aspect as many candidates have had little examination experience or this was a considerable period in the past. "1000 Questions" caters for this and provides very comprehensive revision. The majority of questions, which are in the examination style, are grouped in fifteen topics covering electrical laws through equipment, propagation, antennas and regulations. At the end of the book there is a set of eighty questions making a complete trial examination. Of course the last few pages have all the answers to all the questions.

This kit is excellent value for money and in its improved form is the next best thing to having a personal tutor. Highly recommended.

The price for the kit was $23 at the time of review. All enquiries should be addressed to: *The WIA Education Service, PO Box 262, Rydalmere 2177 NSW.* **AR**

HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With winter time upon us, it is probable that more time will be spent in the "shack", doing such things as regular maintenance to the equipment, cleaning and dusting and the never ending task of sorting out QSL and SWL cards.

Most amateurs cannot resist the temptation of having the rig running whilst they are in its vicinity, so it is a good chance to tune over all the bands, listening to some of the daily nets and if in the mood, a CQ on an apparently "dead band" can produce some amazing results.

One will not get the intended work done, if someone comes back to you, as it will end up in a chatter that could prove to be quite relaxing. Anyway all that work can be done tomorrow, if the same thing does not occur.

There are many school station clubs that operate each lunch-time, during the school year and I commend any operator hearing one of these stations, to at least give them a report and if time is not at a premium, speak to the members, telling them about your station and some of the DX stations that you have contacted, whetting their appetite for more activity, as some of these boys and girls will eventually become amateurs and should be encouraged.

If you can arrange it, and many retired amateurs are not restricted to their operating hours, arrange weekly scheds and check the students' progress. Remember the WIA has courses available in most states and if information is not available from your division, the Federal Education Co-ordinator, Brenda VK3KT, is always willing to advise and she has a vast knowledge of the learning aids that are available. Adopt a school club and promote future amateurs whilst the bands are a little dead and the weather is not wall to wall blue sky.

MYSTERIOUS?

It is apparent from the reading of overseas DX newsletters, that Jim G8GRN giving his QSL information as Sid G4CTQ, has a restricted licence and is working with the United Nations Refugee Organisation and therefore his operation from Uganda as G8GRN/5X will not be recognised as no documentation has been forthcoming and it is unlikely that he will QSL. Sid G4CTQ however has sent a batch of cards to his QTH in Kampala and those waiting on a confirmation in the meantime, sit back, hope and wait.

This brings to mind the operation of Ian VK4NIC, a Novice licencee, who operated from Guinea as VK3NIC/3X in 1980-1981 on non Australian Novice frequencies and this operation was accepted by the ARRL, mainly as I interpret it, it was permitted by the authorities in Guinea as any HF licence from a foreign country was allowed to operate to their regulations and frequency allocations and Ian had the documentation that went to the ARRL to prove it.

In my opinion, if Jim has the Custom authorities permission to bring a transceiver into the country, he is bound to have some authorisation to operate, so why is this not recognised as a valid operation like Ian's was?

On the other side of the coin, G3JKI operated as G3JKI/5A in 1980, in a country that does not tolerate amateur operation, he apparently got the transceiver in or was using a Libyaian commercial transceiver on the amateur bands, but no documentation was forthcoming. Ann F6CYL, his QSL Manager went to all lengths to get the appropriate paper work but to no avail, but Ann eventually honoured each QSL received.

Still on the subject of mystery, operating out of Uganda, Terry 5X5XS, gave his QSL information as EI9G, his home call. According to the DX report, he is back in Ireland and is reported to be "pocketing" the money and IRCs received from cards coming in for confirmation with no intention of replying, also it is doubtful if he had an authentic licence to operate from this country.

According to the report, a neighbour of Terry's is trying to obtain the logs and it will be interesting to see what happens then.

Another operation which is in the clouds is Gerd DJ4IJ, who works for the Rangoon radio station, and has been signing DJ4IJ/XZ saying that he is using a three element beam, will be there for the next eighteen months and that he has verbal permission to operate. The Burmese authorities have made it quite clear in no uncertain terms that amateur operation is a no-no, or is it a case of not what you know but who you know? Remember DF8MP operated as DF8MP/XZ for quite a period from his residence in Rangoon and is still trying to get the documentation that will convince the ARRL DXCC Advisory Committee that it was an authentic operation and it is believed that no documentation will be forthcoming.

WILLIS ISLAND

The new operator on Willis Island is Andy VK9ZA who took over from Graham VK9ZW, who really got into 6 and 160 metres before the end of his tour of duty. Andy is not new to this environment as he has done a stint of duty there before under the same call sign. QSL arrangements are as before with Jill VK6YL, who is doing the hard work.

CLIPPERTON AGAIN

Another attempt will be made, probably this month, if negotiations can be reached regarding travelling by sea plane and landing in the lagoon. It appears that quite a few of the original expedition will be there if the plan comes off.

REPUBLIC OF BELAU

Formerly known as the Western Carolines, this republic has a population of 14,800 inhabitants spread over two hundred islands and atolls and is divided into sixteen states which are mostly located around the western end of the Caroline archipelago. The main island is Babelthuap, formerly Palau, and the administration centre is on the islet of Koror.

The few phosphate deposits that are remaining have become redundant and plans to augment the declining trade will be an upscaling of the fishing, tourist and agricultural industries.

HEARD ISLAND

The National TV station in every state, recently replayed the Anaconda II's participation in the VK0HI and VK0CW amateur component with the climbing party that climbed Big Ben on Heard Island.

This professional production was excellent in its overall presentation and its gave somewhat of an idea as to what a DX-peditioner goes through to give thousands a new country. The amateur component unfortunately got only a small coverage, but was adequate in giving the impression of what the hobby is capable of.

One small criticism, was the omission of all the helpers, which would have been impossible, but a professional journalist could have summed it up in three or four lines and made all the participants that made it happen, happier.

Perhaps their next endeavour, Operation Blizzard to the Antarctic, to restore Mawson's Hut, will contain more meaningful credits to the people behind the scenes.

DON MILLER W9WNV

All the pages in this magazine, for three months, would be needed to recap the history of this one time DXer and there is no intention of commencing the story or commenting on its culmination.

Many of his expeditions were valid and do count for DXCC and it is believed from Jan K6HHD's editorial in Jan and Jay's QSL Manager list that W0BN has the logs, so it may be worth a try if you have worked this operator from a rare location and need the card.

WIA MEMBERS VISIT JORDAN

Mary Ann WA3HUP/JY9AA and Ruthanna WB3CQN VK6AQN/JY9CQ, both members of the WIA, were active from Jordon in April. Both ladies were putting excellent signals into VK and gave many YL hunters a new country. QSL to the home call in each case. Incidentally Mary Ann is QSL Manager for King Hussein JY1.

PRIBILOF ISLANDS

Bill WB4BSJ/KL7 has been showing up on twenty metres at infrequent times. He appears to be genuine and gives his QSL information as C/o St George School, St George Island, 99660, Alaska. His tour of duty ends in June 1985.

MALAGASY REPUBLIC

It appears that Alain 5R8AL, has company from this country which has a sparse amateur community, though six are listed in 1984 International Call Book. The station is 5R8EZ and has been in company with Alain on a number of occasions and therefore should be genuine.

ENTHUSIASTS OF 160 METRES

If you can hear some US stations and cannot work them , do not despair. US licencees are now allowed to use 1500 watts PEP on this band. That power would really test the neighbours BC set for BCI

Whilst on the subject of this band, where reports are sparse, Graham VK9ZW, the OIC of the Meteorological Bureau's outpost on Willis Island has been giving a few VK operators a new country. Unfortunately he was due to leave the island on the 21st of last month. Graham also handed out a few Oscar reports and got the six metre equipment running into an antenna during his stay. His QSL Manager is VK6YL.

SOME US BUREAUX POLICY

Bob W5KNE, Editor of QRZ DX writes "Has anyone wondered what happens to unclaimed bureau cards? Many non-US bureaus return unclaimed cards to the originator. To the best of my knowledge, the ARRL QSL Bureau does not provide any mechanism to return unclaimed cards; they are routinely destroyed after a period of time. However, some QSL bureau helpers have been known to return unclaimed cards at their own expense via the ARRL Outgoing Overseas QSL Service."

I personally, as probably many other VK amateurs have received returned cards, with suitable notations on them from around the world and including the United States. One then knows where they stand, generally without a US state or country that they were seeking.

QSL MANAGER RELINQUISHES

It is now apparent that, as from the 1st May this year, JA8BMK, will not act as QSL Manager for XZ9A, XZ9B, 1Z9A and 1Z9B. The two reasons given are firstly the frustration caused by being able to legitimately confirm contacts and secondly their non acceptance as a DXCC country. He further states that all cards will be "burnt".

THE COLVIN'S BACK HOME

The globetrotting Lloyd W6KG and Iris W6QL, finished off their South American trip at Juan Fernandez. Using the call W6QL/CE0 they had 5,000 contacts to 120 different DXCC countries under difficult conditions.

They arrived by a small plane to see very steep mountains rising up from the sea. On landing they had to take a long walk to where a small boat took them on a two hour trip to the only village on the island. The area where they could set up was near a small cove surrounded by very high mountains which virtually only gave them a window into Europe and the USA. They said it was the worst location that they had ever encountered and the village power supply only operated eight hours per day and the rest of the time they operated from a generator that always misbehaved and there was the problem of scrounging petrol from here and there to run it. Without the help of Celso CE3ACA, who acted as interpreter, generator and radio repairman, also doing some operating, the trip would have been a disaster.

The South America jaunt, which lasted six months netted 55,000 contacts from nine countries. The question now is where will this duo plan to turn up next? All QSLs to YASME.

MARSHALL ISLANDS

Dave KX6DS, with an eighteen months' stint still ahead of him, plants to contact everyone who needs this counry. In the first four and a half months he has made in excess of 13,000 contacts and is using a TH7 at 13 metres.

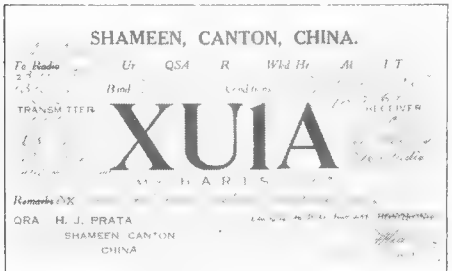
Photograph courtesy Heather Pike VK2HD.

Iris and Lloyd attending to an antenna during their recent expedition to Santa Cruz, Bolivia.

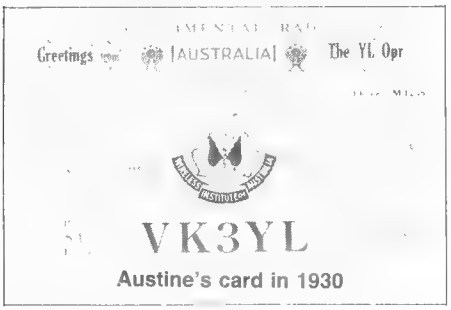
QRZ DX notes that all QSLs for Dave go to NADXC, Box 4563, Huntsville, Alabama 35815-4563.

CARDS OF YESTERYEAR

This month's cards of yesteryear have been submitted by Eric L30042 and depict XU1A in 1933 and Austine VK3YL's card of 1930. Austine celebrated fifty-four years as being on the air in May this year.



The Card of XU1A



Austine's card in 1930

KAMPUCHEA

The home of XU1KC, SS and YL have had their operations curtailed somewhat and have been temporarily off the air due to an attack by the enemy. It has been reported in the press that in Ampil village alone some twenty refugees were killed and fifty wounded, apart from numerous buildings being destroyed. Unfortunately it is apparent that these stations are only active spasmodically, but generally on Sundays, with the help of Phil VS6CT, around 14.335 MHz in the vicinity of 1200 UTC. They are giving their QSL information as PO Box 2225, Ramintra, Bangkok, Thailand.

Ang JA6HQG sorting out some XU cards. David VK3YDF.

This unfortunate incident will probably nullify Mike JH1KRC's statement in the The Family DX Foundation's 5th anniversary monthly news letter that XU would licence foreign operators who wanted to do some DXing with a difference.

The Foundation instigated and fostered operation from XU and have now opened their membership to extend beyond the limits of Japan. More information, for those interested, may be obtained by writing to Mike JH1KRC, 2-2-39-319, Jingumae, Shibuya, Tokyo 150, Japan with a self addressed envelope and a couple of IRC's to cover return postage.

WWV

According to the RSGB News Sheet, some of the propagation reports from WWV are being threatened with termination due the President's latest budget cuts. If you use this information, as a number of VK's do, and you want it retained, a letter concerning its value to you would be appreciated by Harold Leinback, Acting Director, Space Environment Laboratory, NOAA, 325 Broadway, Boulder, CO 80303, USA.

RTTY PIRATE

Apparently, a self admitted unlicenced person by the name of "Pascal" who is using the call EL4YY/MM has been operating out of the Caribbean according to W2JGR in World Radio. It would be prudent to treat any EL prefix operating MM with caution, as to my knowledge, the Liberian authorities have lincenced no more than one could count on the fingers of one hand for maritime operation.

GENUINE???

The call sign EUN1375HK3, claiming to be in Bogata, was heard on 14.025 MHz working amateurs. No matter which way that you look at this call sign can it be termed genuine. It is against ITU assignments and licensing policies. The QSL route was given as JA1GQV for what it is worth.

SSTV

A new monthly magazine devoted entirely to this mode, with up to date news and activity, equipment tips and feature articles written for and by SSTV enthusiasts is obtainable in the US. For those interested a sample copy may be obtained by writing to SSTV TODAY, PO Box 39, Bangor, MI 49013 USA and enclosing US$1.00.

Any SSTVer or RTTY enthusiast would be welcome to include the latest operating news that is happening around the bands in VK via these notes. Due acknowledgement would of course be given to any contributors.

SAN TOME

Jack W4LLZ, according to the Chiltern DX Club newsletter is hoping to reactivate 3X shortly and also activate San Tome and Angola. It is personally hoped that S9 will be activated and those hopes would be shared with quite a number of VK operators.

TAIWAN ACTIVITY

Earlier this year BV0AA was activated, the first time a call sign has been allocated to non nationals and another first was the use of 40 metres, which was on a fixed frequency of 7.001 MHz.

The operators were Steven Liu, who acted as interpreter, a member of the Chinese Radio Association (who have about 4000 members), Gerben PA0GAM, Marti OH2BH, and Michio JA1MIN. Marti OH2BH has been given the duties of QSL Manager for the operation.

Up until this operation, this country's only regular operator has been Tim Chen. Tim commenced operations in 1939, using the call XU6A. After the cessation of hostilities of WWII, he signed under the call of C3YW and after an administrative change in 1959, he was allowed to use CW only, using the call BV2A on 20 metres. In 1974, SSB privileges were permitted and for these operations he uses BV2B. Tim now holds both calls.

All other non national groups in the future will be licenced BV0A? and a group is expected from JA during the year, also Senator Barry Goldwater K7UGA, a magnificent ambassador for our hobby, is hoping to get a group together for an operation in October of this year.

Mainly due to the relaxation of regulations, a new station has been licenced and is due on the air at any time, the call is BV2C. The BV0AA group left him some of their operating equipment, an FT757GX with power supply, the FL2100Z linear and the Northern California DX Foundation donated the TH3MK3 antenna. A good start for any amateur.

L to R Steven, Gerben, Tim, Marti and Michio wearing the T shirt of Lars SM0GMG, who couldn't make the trip.

NEW COUNTRY???

Martin G3ZAY, has submitted an application for separate status for the British sovereign base areas on the island of Cyprus. Will they count? It could be a long deliberation by the DXCC Advisory Committee on this one.

QSL HASSLES

Alan ex VK0AN now VK2BNA, according to overseas publications is having mail returned noted "address unknown".

A friend kindly caught up with Allan for me, via the landline, and Alan was amazed that this is happening as to his knowledge all mail has been forwarded. In the middle of May Alan processed some 500 cards and forwarded them to the bureau and in all since his return from the Antarctic has sent out approximately 2500 cards. Alan's new address is VK2BNA, 75 Winbourne Road, Hazelbrook, 2779, NSW.

In the conversation, Alan noted that he was a bit perturbed at the number of duplicate requests he was receiving. He was returning these, complete with the money forwarded by the sender and the date the first card was forwarded at his own expense. He also noted that many VK's, mainly in the Novice class, were not forwarding an SASE, but he was returning them the way they were sent at his own expense.

SVALBARD

The JW prefix may be heard more often in the future as the radio amateur club at Longyearbyen, JW5E, has obtained a small cottage where a station will be installed with accommodation available for visiting amateurs. Transport to this remote and cold area is available on regular flights and organisation is through Mathias LA5NM – JW5NM. One of the first to make use of this facility will probably be Jose EA6ET.

PROFILE OF T77C

The tiny Republic of San Marino comprises an area of thirty eight square miles and a population in the order of 38 000 inhabitants, atop Mount Titano in central Italy, and it is claimed to be the oldest republic in Europe dating back to 1231.

This area boasts ten licensed amateurs and eleven stations. The eleventh station is the official club station T70A (prefixes were changed from M1 to T7 in April 1983) which is dedicated to the memory of M1A the late Professor Corado Francini M1A, the first amateur operator from San Marino.

One very active amateur is Tony T77C (formerly M1C), and in ten years of operation has logged more than 82 000 contacts. That is a staggering average of 8200 QSOs per year. A very sought after gentleman, particularly on CW, and in 1982 he made in excess of 15 000 QSOs. Amongst Tony's many awards is 5BDXCC which has been gained by his TS-830S followed by a "home brew" kilowatt linear. The antenna for the upper bands is a two element delta loop with various dipoles for the lower frequencies.

RADIO AUSTRALIA

Radio Australia's transmissions on 12 290 MHz is used as an indicator as to propagation conditions, according to a report by Mike G8FCD, in RADCOM. Mike points out that this frequency is continuously in use and is invaluable for those wishing to check the conditions on the 10 and 14 MHz band.

DENIED WCY SUFFIX

One of the few countries in the world, not to be able to use the special WCY suffix, that was used when the United Nations declared 1983 as World Communications Year, was Sweden. Representations were made by the Swedish Amateur Association to the governing authority, Televerket, for a club in each call area to use the special suffix. The request was denied.

CALLSIGN CHANGES

As indicated in these notes previously, major changes were to take place in the allocation of prefixes and suffixes in the USSR.

Tibor OK3BG supplied the following information to the RSGB News Letter.

The first letter of the prefix will be U or R equivalently regardless of band. The second letter will denote the Republic, essentially as the present system.

A, N, V, W, Z = Russian SFSR
B, T, Y = Ukrainian SSR
C = Byelorussian SSR
D = Azerbaijan SSR
F = Georgian SSR
G = Armenian SSR
H = Turkmen SSR
I = Uzbek SSR
J = Tadzhik SSR
L = Kazakh SSR
M = Kirghiz SSR
O = Moldavian SSR
P = Lithuanian SSR
Q = Latvian SSR
R = Estonian SSR

In the three letter suffixed callsigns, the administrative/territorial unit (oblast, kray, autonomous republic/region/area, major cities of — Moscow, Leningrad, Kiev, Sevastopol Minsk, Alma-Ata and Tashkent) is denoted (a) in the RSFSR by the first letter of the suffix in conjunction with the call area number, (b) everywhere else by the first letter of the suffix Individual stations will have three letter suffixes, ending with two letters in the AA to VZ series (eg UT5UAA, UT5UAB UT5UVZ, in the city of Kiev). Club stations will have three letter suffixes, ending with two letters in the WA to ZZ series In the RSFSR, the existing system of call districts (1,2,3,4,6,9,0) will remain, in all other areas the call number will not be significant. The present two letter calls will remain unchanged eg UT5AB, UA1NA etc.

Well even after Tibor's detailed explanation, I am still a little confused but it will all probably come together when a few of the new callsigns are worked.

DIFFICULTIES

The 1A0KM group are having a lot of problems getting permission to operate from this area and this has been the cause of the infrequency of operations since they first came on the air in November 1980, when the Knights of Malta requested some amateurs to assist with radio contacts to their field hospitals located in the territory of Irpinia, in Southern Italy which was devastated by a tremendous earthquake. The station was frequently on the air until January 1981

Apparently the placing and removal of equipment for an operating session causes many hassles. The tri-band beam and other aerials have to be disassembled and removed from the roof after each operation for aesthetic reasons as with the other equipment, as the villa which is located at a beautiful spot in Rome near the Tevere River, is regarded as an historic and valuable monument.

It is thought that a more permanent arrangement will soon be made in the near future when a permanent area is made available for them. The operators have purchased a 901DM transceiver, a Henry R2DK Classic amplifier and a five band 18AVT ground plane antenna. They plan to put the antenna on the building terrace and fold it down along the fence line when not in use.

All QSLs for any operation presently go to Mario I0MGM, who by profession is an attorney and was instrumental in providing and negotiating the documentation with the ARRL to have it accepted as a DXCC country, but the task is getting a little out of hand due to the heavy work load involved and in future the cards may be sent to the operator of the day The operators of 1A0KM are Antonio I0IJ, Antonia I0JX, Mario I0MXM, Alfonso I0AMU and Mario I0MGM

OLYMPIC SPECIAL EVENT

News from N6IIU and N6AUV state that in honour of the 1984 Olympic Games two special event stations will be in operation.

Operation will begin at 0000 UTC 28th July through to 2400 UTC 8th August, callsigns being W84OG (Olympic Games) and K840G.

Special QSL cards will be available via the W6 Bureau or direct to Olympic Games, PO Box 9007, Stanford, CA. 94305. Direct cards with SASE or 3IRCs and SAE will receive highest priority.

Operating frequencies will be: 3.505-535, 3.873-930, 3.725, 7.005-035, 7.206-230, 7.125, 14.005-035, 14.160-230, 21.005-035, 21.175-360, 21.125, 28.005-035 and 28.560 MHz.

The first 48 hours operation from W84OG will be by members of the Northern California Contest Club and the group will be working MUF and grey line for DX station.

BITS AND PIECES

The new prefix for Corsica TK is already appearing on the bands. **** TU1 call are novices, the TU2 prefix is used by residents with a full licence and visitors are allocated TU4 prefixes **** If you work Kevin 6Y5KH, who is quite active, you have worked the youngest operator in that country, he is fifteen years old. **** Two more amateur radio stations are active in Nepal, both from the broadcast station. they are 9N1RNP and 9N1KBK, the station's chief engineer. **** Father Moran 9N1MM, a controller on SEA Net and for many years the only station in Nepal is in his 60th year as a Jesuit priest, and will be taking a long holiday in the US from early September. **** Bernhard DF7ET, will be working in Libya for several years on governmental work. He is hoping to obtain a licence to operate amateur radio. ???.**** Another station that trusts he will obtain operating privileges is Chuck AB4Y, who is a member of the staff of the Amercian embassy in Mozambique and Chuck W4LZZ's, intended visit to that country has been curtailed for a couple of months due to illness. CTIZG has a letter from the Presidents office of Mozambique confirming that there is no officially licensed stations in that country! **** Erik SM0AGD, well known to VK amateurs was trying to obtain a licence to operate from SV/A Mount Athos, but no luck. It is apparent that this situation regarding the hobby will not change until the administration of Mount Athos is altered following elections by the monks. **** QSL cards for V2ARO, who quotes his QSL route as WB6SHD should not be sent. WB6SHD refuses to accept them and in April over seven kg of cards were destroyed via the bureau. Maybe a direct approach to WB6SHD with the necessaries may bring results. No further comment except what a waste of time, money and paper for the unfortunates, some, their only access to receiving a card. **** XF——All XF2 and XF3 stations are located on islands close to the Caribbean coast of Mexico. XF2 applies to stations West of Longitude 90 and XF3 to those East of Longitude 90. **** Spratly may appear next September or October, when the monsoon season is over and sufficient funds are raised. **** Two DXers turn up in G land. ZD8TC is now signing G4UPS and H44DX sports the call GD3RIH. **** Alistair, who was with a BBC TV team, operated mobile through 5U, TJ and 7X. He requests cards for the operations of TJ1ES/M, 5U7ES/M and 7X3ES/M be sent to the RSGB Bureau, where they will be forwarded on to him for reply. **** According to many reports, the Government of Thailand has lifted its ban on amateur radio and HS stations should start to reappear very soon. **** 7SK0AC was a genuine call, issued by the Swedish authorities for the annual council of the DX Council held in Stockholm. QSL to SK0AC, the host club station.

QSL MANAGERS

3A0AA-I0MWI, 3D6AN-WA4PAV, 4K1QAV-UA1QAV, 4N4CA-YU4CA, 4T4WCY-Yasme, 5H3FG-VE7QM, 5H3HS-DK8MZ, 5J5LR-HK3SO, 5T5RY-F6FNU, 5W1ET-VE3XG, 6W1AS-DJ3AS, 6W1KA-KK1X, 6Y5DA-VE4JK, 6Y5DZ/J3-6Y5DZ, 8P6RE-KC3EK, 9U5JB-ON5NT, 9Y4CDR-WD5JOL, 9Y4DX-AG1J, A22DP-W7GVC, A92NH-W8LU, AH8/DLIVU-DB5UJ, C21NI-1980 JA7SGV operation only - JA7SGV, CE3DPD-F5IL, CT2DL-KE4OC, CT4UW-WA3HUP, CX2ET-CX1EL, CX3BR-W3HNK, CX7BY-W0IJN, CY0SAB-VE1AJH, DF2AL/9L1-DF2AL, DF4RD/SV9-DF2RG, DL7NS/HB0-DL7NS, DL8YR/LX-DL8YR, F6HIX/V2A-F6EYS, FB8WJ-W4FRU, FB8YK-F6EMY, FG0HLI/FS7-N6DX, FK8AU-I0PU, FM7CD-F5VU, GD0WCY-GD3KHE, HL9FY-KC0LG, HL9RC-KC0LG, IS0/KA1ESR-KA1ESR, IS0/K1MM-K1MM, IT84/-ON5NT-ON7FK, JD1BAT for 9/81 to 3/82 -JH4PRU until 31/10/1984, J73/F6HIX-F6EYS, JT0DJT-18YGZ, JW1CY-LA1CY, JW1UW-LA1UW, JY8AQ-W6ORD, JY8CQ-WB3CQN, JY9AA-WA3HUP, KK7K/DU2-WB7NOB, KX6OH-VK9NS, LU1JTA-LU4JJ, OH0AM-OH2BH, OH1MA/CT3-OH1MA, OH9TH/4U-OH9RJ, PI1AJH/-LX-PA0 Bureau, T2ADX-JA2VUP, T2RAA-JA2VUP, T2RTY-JA2VUP, T2YKC-JA2VUP, T26FE-DL4BC, TL8TX-K0VZR, TR0AB-F6AJA, VK0AG-VK3BER, VK0CK-VK5LP, VK9ITU-VK9XI, VK9ZA-VK6YL, VK9ZW-VK6YL, VR6KY-LA7JO, WB3CQN/OE6-WB3CQN, YB0ACT-SM0DJZ, YB0WR-DK9JD, YJ0AMM-F6IKT.

QSL ROUTES

3D6AN	PO Box 64, Manzini, Swaziland, Africa.
4S7DA	PO Box 907, Colombo. Sri Lanka.
4Z4UR	Ehud Zager, 26Raz Street, Raanana, 43356, Israel.
5N8BAV	PO Box 4587, Kano, Nigeria.
6Y5KH	31 Glen Road, Kingston, Jamaica.
6W1CC	PO Box 1258, Dakar, Senegal.
7P8CL	PO Box 301, Maseru 100, Lesotho, Africa.
8R1RBF	PO Box 10932, Georgetown, Republic of Guyana.
9H1GY	PO Box 114, Valetta, Malta.
A71BK	PO Box 1556, Dohar, Qatar.
AH9AB	PO Box 248, Wake Island, 96898, USA.
AP2P	PO Box 999, Rawilpindi, Pakistan.
AP2ZA	PO Box 4787, Karachi, Pakistan.
BY4AA	PO Box 205, Shanghai, People's Republic of China.
CR9CT	PO Box 12727, Hong Kong.
EA9OI	PO Box 260 Melilla, Spain.
EC9HE	PO Box 755, Melilla, Spain.
EL2BB	PO Box 463, Monrovia, Liberia.
EL2FP	PO Box 98, Monrovia, Liberia.
F6GNS/TU	PO Box 1093, Yamoussoukro, Ivory Coast.
FH8CR	PO Box 28, Dzaoudzi, 97610, Mayotte, France.
OD5SH	PO Box 66, Tripoli, Lebanon.
PI1AJH/LX	PO Box 393, 1780AJ, Den Helder, Netherlands.
TF3SZ	PO Box 1058, Reykjavik, Iceland.
TR8JLD	PO Box 484, Libreville, Gabon Republic.
TR8SJC	PO Box 2132, Libreville, Gabon Republic.
VU2REC	KREC, Mangalore, 574157, India.
XT2BR	PO Box 116, Ouagadougou, Voltaic Republic.
XX9AN	PO Box 468, Macau.
XX9WW	PO Box 933, Macau.
ZK2RS	PO Box 37, Niue Island, South Pacific.
ZS4AE	PO Box 1902, Wekom, 9460 South Africa.

WORKED ON 20m ON THE EAST COAST

3D2ER, 5B4LP, 5B4MD, 5W1AU, 6V1A, 6W1DY, 7X2LS, 8P6CC, 9H1GY, 9H4G, 9N1RN, A71AD, A92DT, AH3AA/KH9, C21RK, CE0GBL, CO2HF, CP1NK, CT3BM, D44BC, EA6MQ, ET2PS, FB8YK, FG7BG, FK0TAK FK8, FM7CP, FO8JP, GW3NNF, HV3JS, J37AH, JW5NM, JW6WD, KX6OR, OH0AM, S79WHW, SV1OL, T30DB, T77T, T77V, TF3SV, TG9VT, TI2CC, TR8BH, TR8CR, UG6GAF, VE7BIP, VK9LL, VK9ND, VK9ZW, VR6TC, VS6DO, YI1BGD, ZB2J, ZD8RC, ZK1CX, ZL8AFH, ZP5MJO, ZS5BH.

CW SWLING WITH ERIC L30042.

28MHz
A4XJP, JH7YWM, BEACONS VK4RTL, VK6RWA, Z21ANB (0600 UTC), ZL2MHF, 3B8MS.

21MHz
KH6IM, NH6BC, T2ITA, YC4FAV, ZS6BIM.

14MHz
HH2VP, HL9XX, XE1FR, YB5ASO.

10MHz
JP1BTA, JH6HW, VE1BB, KO1C, W1FZY, N5VV, W9RGB.

7MHz
CT1CXD, DL6WD, EA5YU/EA8, G4WJJ, GI3OQR, HA7KPW, HL4XM, I2DMK, IT9QGE, LX1PD, UK6AAU, UA0IDC, UB5DCZ, UY5LO, UZ2FWZ, UZ4PZF, UZ6LWY, UO5OCV, VK9NS, YB5ASO, YU2BTU, YV5HL.

INTERESTING QSLs RECEIVED

DJ2FR, F2PC, F9YZ, JR2DPL, LX1YZ, W6KG CP6, OE5HAM, OE6RH, PA0PFW, W2ERJ, K4RF (all 10 MHz); A35MJ, N5RM/C6A, G6ZY/EA6, EA9JV, FG7AM, HG19HB, KH6DX (1.8 MHz), W6KG HK0, IS0KPQ, LX1BJ, P29KY, P29SS, P29VH, PJ3JB, TR8JD, AX4WCY, VK8RP, VE3BVD DU6, T20AT, XU1SS, YC4FNN, Y57YG, ZK1XL, 4X6KJ, DK7PE 4S7.

THANKS

Thanks are extended to such magazines as OZ, WORLD RADIO, RADCOM, QST, cqDX, VERON, BREAK IN, also weekly and monthly newletters including DX NEWS, QRZ DX, RSGB NEWS BULLETIN, ARRL NEWLETTER, KH6BZF REPORTS and JAN and JAY O'BRIENS QSL MANAGER LIST which have provided the writer with valuable information. Australian amateurs who have contributed include VK3BY, FR, YJ, YL, 6FS, NE, 9ZW and L30042. Overseas amateurs included G3NBC, JH1KRC, ZL1AMM and ZLIAMN. Sincere thanks to one and all.

AR

QSP

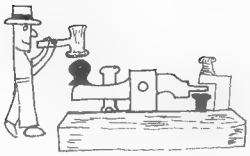
EQUIPMENT REVIEWS

Regrettably, we have been publishing fewer performance reviews of new equipment over the last year or so. This does not mean that there is less new equipment being introduced. Far from it! In fact, we could review a new receiver or transceiver every month if we had enough experts to do the testing and writing and enough space to publish them.

Popular demand for review articles was emphasised at the 1984 Federal Convention, and the Publications Committee was asked to provide more if at all possible. In response, we have recruited a new member for the review panel, but space is still a problem. Our total pages are determined by a budget which is already stretched to the limit.

We have no choice therefore, following some overseas magazines, but to reduce type size in the regular columns such as "How's DX?", "VHF UHF — an expanding world", etc, effective with this issue. With our contributors' help we should then achieve the non-metric miracle of squeezing a "quart into a pint pot", giving you, the readers, even more information than now. And if you find it harder to read, then perhaps you do need to visit your friendly local optician!

AR



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

Request of the month this time was from the editor of an interest-group newsletter, who thought I might be interested in doing an article for them on the subject of CW net operation.

Well, the interest is there, but the ability, I must sadly confess, is not. Some of you may remember when this column started all of two years ago (this is indeed the 24th issue) I listed CW net operation among the topics I intended to discuss. Well, my intentions were to develop some familiarity with the subject and then write about it, but in fact I have not yet (ever) participated in a CW net other than a three-station round-robin for code practice purposes shortly after gaining my amateur licence!

CW nets for the purpose of code practice are quite common, but other than that the reasons for running a CW net would be the same as the reasons for running a phone net — traffic handling, social chatting, etc.

I quite enjoy the odd three- or four-way QSO on phone, but when it is called a net it seems to imply, at least in this country, that each station's over is stretched out as long as possible and you just sit and listen (or make notes) until your turn comes 'round again. For that reason I prefer not to get involved in nets unless I have traffic for a participant. So much for my personal opinions! I am, however, a great believer in democracy, so I can certainly acknowledge that other amateurs enjoy aspects of the hobby which don't interest me.

Accordingly, I would like to take this opportunity to invite any conductor of or participant in CW nets to put pen to paper and describe CW net operation for the benefit of Pounding Brass readers. If someone will send me a few paragraphs I will be delighted to include them in the column.

A good candidate for guest editor on the subject of CW nets would be a member of the Sunday morning 7.025 MHz net. This is a bunch of your classic brass pounders who have been operating a net for years. The net control station uses QN signals (a series of Q-code signals specifically for net operation were listed on page 49, September 1983 AR) and a newcomer is paired off with someone of comparable speed and sent to a different frequency to conduct a two-way QSO. In that sense, it is not the sort of net that most amateurs are familiar with. Generally speaking, one is never in contact with more than one station at a time, so it would seem to be akin to the DX nets, except that what is being arranged is a CW QSO rather than a rubber-stamp contact.

As promised last month, here are some more tid-bits from the 1928 Radio Amateur's Handbook.

"TESTING POLARITY . . .

"If no DC voltmeter or ammeter of suitable range with the terminals marked plus or minus is available, some other simple tests can be applied if one is in doubt about the polarity of a direct-current source. The two wires may be dipped in a weak salt-water solution or in a solution of hydrochloric, sulphuric or nitric acid. The larger quantity of bubbles (of hydrogen) will come from the negative terminal.

"Some test paper may be prepared by getting a small quantity of the necessary chemicals from the local drug store. Dissolve one gram (1/28 oz) of phenolphthalein in a little alcohol. Add this solution to 100 cubic centimetres (3.5 fluid oz) of a 10 percent solution of potassium chloride in distilled water. Filter paper or other absorbent paper of the same texture and colour should be soaked in the solution and dried, then cut into strips. A piece of this paper moistened with water and placed in contact with the two wires will be stained a bright red at the negative terminal."

"LEARNING BY LISTENING . . .

"Another method of learning the code will appeal to some individuals. We all want to try our skill on some real messages when we have progressed this far. The next step after memorising the letters is to put into practice on an actual receiving set what we have learned.

"A number of high-power stations can be heard in every part of the world. Many commercial short-wave stations send on wavelengths below 100 metres and can be copied with the simple receivers described in this book. A one-tube or two-tube receiver can be quickly and cheaply put together for long-wave code practice. Powerful trans-Atlantic commercial stations send on wavelengths between 5000 and 20 000 metres. Many of them use tape transmission. The sending is perfectly regular. Often words are repeated twice (does this mean sent three times? — Ed). Both understandable English and secret code (most excellent for code practice) are used in the text of the messages. These stations send at speeds depending on the reception conditions at the time of transmission. It is usually possible to pick a station going at about the desired speed for code practice. There is an increasing number of such commercial services now using short-waves so it is possible to 'learn by listening' on short waves although there will be less confusion if we start out with the long-wave apparatus which will next be described."

Sadly, there are far fewer stations to listen to these days — and VOMs are easier to come by than sulphuric, nitric, or hydrochloric acid. We'll see what other interesting trivia we can unearth later. For now . . . 73.

AR

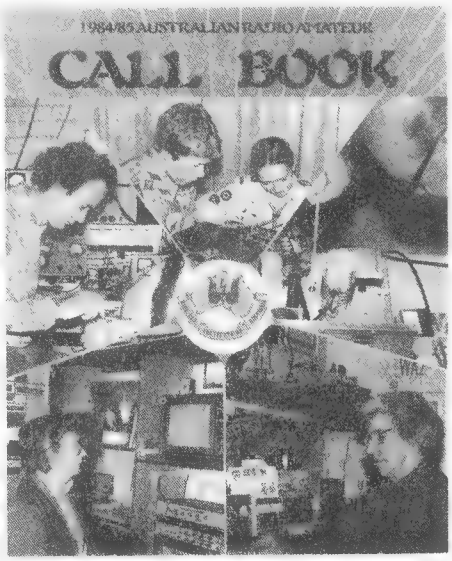
1984-1985 CALL BOOK

Work on the Wireless Institute of Australia's 30th Edition of the Australian Radio Amateurs Callbook is well advanced. Copies will be available from your Divisional Offices in early September.

A tremendous effort has been made to ensure that the call sign listing will be correct as at the end of June 1984. Over the past twelve months there has been a very high percentage of call sign changes due to upgradings, etc.

The technical data included has been updated and expanded to include Packet Radio, Third Party Nets, ALARA, Ionospherics and many more.

Again this manual will be a limited edition so we suggest you place your orders early to avoid disappointment.



CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDAR

JULY

1	Canada Day Contest
7-8	Venezuelan Phone
7-8	NZART Memorial Test
14-15	International Radio Sport Test
28-29	Venezuelan CW
28-30	County Hunters CW Contest

AUGUST

6	Illinois QSO Party
11-12	Remembrance Day Contest
11-12	DARC European CW Test
18-19	SARTG RTTY Test
25-26	All Asian CW

SEPTEMBER

8-9	DARC European Phone Test
15-16	VK Novice Test
29-30	Delta QSO Party

NOTE THE CHANGES TO THE RD TEST

CW now 2 points per contact VHF 6 hours between contacts complete front sheets dupe sheets.

Closing date for logs advised in the next issue.

Well, this is the last column that I will be preparing (I hope), and now I will be able to become one of the family again instead of being relegated to the 'Counting Room' for months on end.

The job of Contest Manager has been interesting and most rewarding when the cheerful and helpful notes arrive from you.

Thank you for your help, patience and your assistance with the job.

There is still some outstanding matters that require finishing, the contest certificates for the VK Novice Contests will be forwarded to the relative recipients by the new Contest Manager when they arrive from the printers (if ever).

Regarding the letters recently received regarding the VK Novice and the John Moyle Contest Rules. I have not answered these as it is the responsibility of the new Contest Manager to implement the rules and all if any, changes. Therefore it is most desirable for the new FCM to have the maximum input into these alterations so that he/she can be confident of the new rules.

This is unfortunately not the case with the RD contest. So I have made the decision on the basis of the comments that have appeared in your notes, letters and logs. I trust that the majority will be satisfied.

The quality of some of the logs that have been received are very definitely candidates for the rubbish bin, with unreadable names, no declarations and no totals (either page or final) on the log, however they were persisted with and some sense was usually able to be made of them, sometimes callsigns were wrong and sometimes the log was put in the wrong section but at least the logs that were received were entered in the results (some even belatedly).

REMEMBRANCE DAY CONTEST 1983

Please note the changes. Closing date next month.

18th-19th AUGUST

This contest is held to commemorate those amateurs who died during the Second World War and is designed to encourage friendly participation between all amateurs and to help in the improvement of operating skills of all participants.

This contest is held annually during the weekend nearest the 15th August, the date on which hostilities ceased in the South-west Pacific area.

The contest is preceded by a short opening address on all WIA frequencies by a notable personality.

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the name of those who made the supreme sacrifice and so perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, the winning Division will receive a suitable certificate.

OBJECTS

Amateurs in each VK call area will endeavour to contact other amateurs:

1. In other VK call areas, P29 and ZL on all bands 1.8 throught 30 MHz, except 10 MHz.
2. In any VK call area (including their own), P29 and ZL on authorised bands above 52 MHz and as indicated in Rule 5.

CONTEST DATE

0800 UTC 18th August, 1984, to 0759 UTC 19th August, 1984.

All amateur stations are requested to observe 15 minutes silence before the commencement of the contest on Saturday afternoon. An appropriate broadcast will be relayed from all Divisional stations during this period.

RULES

1. THERE SHALL BE 4 SECTIONS:
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Receiving.
   (d) Open.
2. ALL AUSTRALIAN AMATEURS (VK callsign) may enter the contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for the awards.
3. AMATEURS MAY USE THE FOLLOWING MODES:
   Section (a) – AM, FM, SSB, TV.
   Section (b) – CW, RTTY.
   Section (c) – Rx, A, B, C.
   Section (d) – All modes.
4. CROSS MODE OPERATION is permitted. Cross band operation is not permitted excepting via satellite repeater.
5. SCORING CONTACTS:
   (a) On all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on Phone, CW, SSTV and RTTY.
   (b) Section A contacts score one point.
   (c) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in Rule 3 at intervals of not less than one hour since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.
   (d) Acceptable logs for all sections shall show at least 10 valid contacts.
6. (a) MULTI-OPERATOR STATIONS ARE NOT PERMITTED (except as in Rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own callsign. Should two or more licensed operators wish to operate any particular station each will be considered as a contestant and must submit a log under his/her own callsign.
   (b) An operator can operate only one call sign during any one period of operation. He/she may section the contest period for differing call signs.
7. CLUB STATIONS may be operated by more than one operator, but only one operator may operate at any one time, ie no multi-transmission. All operators must sign the declaration.
8. ENTRANTS must operate within the terms of their licences.
9. CYPHERS:
   The serials number will consist of three figures that will be incremented by one for each successive contact. A contestant may start with any number between 001 and 999, but when 999 is reached he will start again at 001.
10. ENTRIES:
    Entries must be set out as shown in the example using one side of paper only. Envelopes must be marked "Rememberence Day Contest", posted to FCM, Box 1234, Adelaide, SA. 5001.
11. TERRESTRIAL REPEATERS:
    Contacts via terrestrial repeaters are not permitted for scoring purposes. However, contacts may be arranged through the repeater and, if successful on another frequency, that contact counts for scoring purposes.
12. PORTABLE OPERATION:
    Log scores of operators located outside their own call area will be credited to that call area in which the operation takes place, eg VK5XY 2. His score is added to the VK2 scores.
13. ALL LOGS shall be set out as in the example shown and, in addition, must carry a front sheet showing the following information in this order:
    Section, score, callsign, mode, name, address and page tally.
    Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
    Signed . .. . Dated .. ..

EXAMPLE RX LOG RX OPEN (D)

Date	Time UTC	Mode	Stn Calling	Stn Called	RST Tx	RST RX	Points
18 Aug	2357	SSB	VK2OOO	VK7???	59717	57004	1
18 Aug	2359	CW	VK9XX	VKIXX	599718	539121	2
–	–	–	–	–	–	–	–
–	–				–	–	–
–	–	–		–	–	–	–
				Page Total	17		

Page 1 of 7 Progressive Total 17

EXAMPLE FRONT SHEET

Section D – all mode Tx
Score 1498
Callsign VK1XXX
Mode SSB, FM, CW, RTTY
Name: Joe Brown
Address: P.O. Box XXX, Farm Orchard ACT 2611

Page Tally	10 Sheets	1498 Points
	Page	Score
	1	47
	2	93
	3	29
	4	88
	–	–
	–	–
	Pages 10	Score 1498

EXAMPLE TX LOG

VKIBR Open Section (D)

Date	Time UTC.	Mode	Call	RST Sent	RST RX	Points
18 Aug	0800	SSB	VK2XYZ	58001	52047	1
–	0803	CW	VK3XYZ	559002	519094	2
–		–	–	–		
–		–	–			–
–		–	–	–		
			Page Total		57	

Page 4 of 10 Progressive Total 253

14. THE FEDERAL CONTEST MANAGER has the right to disqualify any entrant who, during the contest, has not observed the regulations or has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set out logs.

15. THE RULING of the Federal Contest Manager of the WIA is final and no disputes will be entered into.

AWARDS (Sections (a) and (b))

Certificates will be awarded to the top scorers in each section for each call area and will include the top limited, K and novice station. There will be no outright individual winner. Further certificates may be issued by the FCM at his discretion.

Certificates will be issued to top ZL and P2 scorers.

VK0 scores are added to VK7 and VK8 to VK5. Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P2 stations are not included in the scores of any VK call area.

RECEIVING SECTION

1. THIS SECTION is open to all shortwave listeners in Australia, Papua New Guinea and New Zealand, but no active transmitting station may enter.
2. CONTEST TIMES and logging of stations on each band are as for transmitting.
3. ALL LOGS shall be set out as in the example. It is not permissible to log a station calling "CQ". The detail shown in the example must be recorded.
4. NOTE the times and conditions set out in Rule 5 (transmitting).
5. CLUB STATIONS may enter this section. All operators must sign the declaration.

AWARDS FOR SWLs

Certificates will be awarded to the highest scores in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager.

RD SCORE FORMULA

This year's weighting factor and formula is as follows.

$$\frac{\text{Total Contacts per Division}}{\text{Total Licenses Issued}} \times \text{Weighting factor}$$

Should each State perform equally as well in 1984 as in the past nine years (averaged), the results will become a seven way dead heat. Consequently, the most improved State will take the trophy and also earn a revised and lower weighting factor for the following year.

DUPE SHEETS

To assist in speeding the results of the contest, you can include a dupe sheet with your log.

This dupe sheet assists you in determining your previous contacts and assist me by providing me with an accurate log.

Republished here for your assistance is a method of producing a dupe sheet, which will take very little time to complete during a contest and will save all that looking through log sheets to see if you are duplicating your contact again. It should also provide a faster turnover of contacts. I strongly advise your use of this sort of exercise.

Dupe sheets is republished from an article in AR July 1981 by John Moulder VK4YX.

DUPE SHEET FOR THE REMEMBRANCE DAY CONTEST

Avoiding duplications on your log sheets during a contest can be a problem, even if you have only worked 50 contacts. The method I am about to describe is not original. I came across an article in a 1960 edition of AR, which described a method of using a dupe sheet for each VK call area, plus one for ZL and P29. As you can probably surmise, it was evolved for the annual RD contest.

Juggling a few sheets during a contest didn't appeal, so I adopted the basic idea and came up with the following.

I obtained a sheet of thin white cardboard approximately 60 centimetres square from the newsagent. I measured in 4 centimetres from each side and drew a border. Along the top and bottom and likewise down each side, make a mark each 2 centimetres. Draw a grid pattern by interconnecting all the marks top and bottom and side to side. At the top and bottom of each column, starting from the left-hand side, mark each letter of the alphabet. Do the same down each side, starting at the top.

The top left-hand corner should look like Fig. 1.

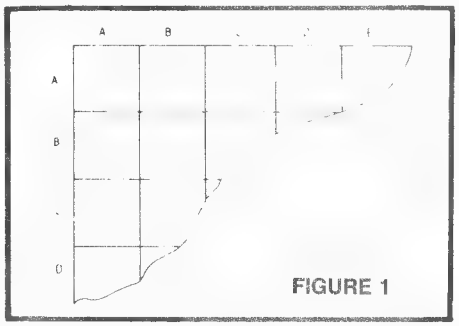


FIGURE 1

Along the top of the cardboard we label FIRST CALL LETTER. Down the sides we label SECOND and THIRD CALL LETTERS. We are now ready to go.

As an example, say we worked VK8BD on 15 metres. Looking across the top of the sheet, we locate column B; down the side we locate column D; in the intersecting square we write, 8/15. See Fig 2. If you worked P29BD on 10 metres, you would enter P29/10 in the same square. We can take two further steps if needed. You may like to enter the mode after the callsign and the time of contact, if it can be squeezed in.

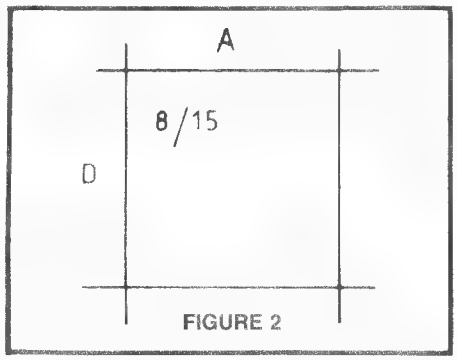


FIGURE 2

Very clever you may be thinking, but what about a callsign with a three letter suffix? As an example we'll say we worked VK7BCC on 80 metres CW, and ZL2BCA on 15 metres SSB. We locate our intersecting square of B C, and we enter 7C/80CW. Underneath this entry we write ZL2A/15SSB. See Fig. 3. All the information can be fitted in a 2 centimetre square if you use a fine tipped pen. You could use larger squares, however the size of carboard needed may make it too unwieldy. This system is used hand in hand with your normal log sheets. What I did was work a string of stations, enter them on the dupe sheet, and then continue on in a merry way.

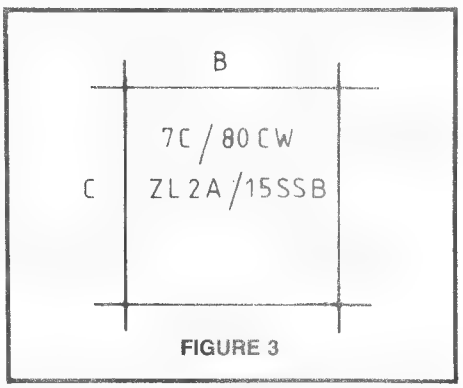


FIGURE 3

The only problem I can envisage, is the size of the sheet may make it unworkable for some operators. I got around the problem by taking over the kitchen table, which just happens to be beside our wood burning stove (very cosy). I had a great time during the 1980 RD. I made my best score, with no duplications.

Unfortunately I completely forgot to send my log sheets in. Give this system a go.

Please ensure that you keep your phone signals out of the RTTY & CW sections of the band, as the RTTY boys are intending to boost interest in this mode.

Canada Day Contest

0000 to 2400 UTC Sun., 1 July

Sponsored by the Canadian Amateur Radio Federation, this contest follows the same pattern as the one in December.

Everyone can work anyone, 2 through 160 metres, both on phone and CW. Single operator, single band and all band, multi-operater, single transmitter all band only. There is also a QRP (5 watts) and non-Advanced license classification.

The same station may be worked on each band and mode for QSO and multiplier credit.

Exchange: RS(T) and QSO number starting with 001. VE1's are requested to indicate their province.

Scoring: 10 points for each QSO with a Canadian. One point if with anyone else. Add 10 bonus points for each contact with any CARF official news station using the suffix TCA or VCA.

Multiplier: Number of VE prov/terr worked on each band and mode (12 prov/terr). Contacts with stations outside Candada count for QSO points, no multiplier.

Frequencies: 1.810, 1.840, 3.525, 3.770, 7.025, 7.070, 14,025, 14.150, 21.025, 21.250, 28.025, 28.500 MHz

Awards: Certificates to the top-scoring entries in each class, in each DX country. Trophies to single operator, single and all band, and multi-operator winners.

Include a summary sheet with your log showing the scoring, etc. and a dupe sheet.

Mailing deadline is 31st July to: Canadian Amateur Radio Federation, P.O. Box 2172, Station D, Ottawa, Ont. K1P 5W4 Canada.

Venezuelan Contest

Phone: 7-8 July CW: 28-29 July

0000 UTC Saturday to 2400 UTC Sunday

This is the 22nd yearly contest celebrating Venezuela's independence. It's a world-wide type contest; therefore, do not confine your activity to working YV's only. Use all five bands, 10 through 80 metres. There are four classes: Single operator, single and all band, and multi-operator single and multi-transmitter.

Exchange: RS(T) plus a QSO number starting with 001.

Points: Contacts between stations in different countries, 2 points. Between stations in the same country zero (0), but permitted for multiplier credit.

Multiplier: One for each YV call area, each US call area, and each country (including own) worked on each band.

Final Score: Total QSO points from all bands multiplied by the sum of the multiplier from each band.

Awards: A plaque to the highest scorer in each class. Medals to the highest scoring single operator in each continent and the Bolivarian countries (Bolivia, Colombia, Ecuador, Panama, Peru).

Certificates to stations in Asia and Oceania working 5 YV's and 10 countries.

Use a separate log sheet for each band, and a summary sheet showing the scoring, your name and address in block letters, and the usual signed declaration. It is requested that all award applicants include a remittance of $2.00 or its equivalent in IRC's.

Mailing deadline is 15th August for phone entries and 15th September for CW. They go to: Radio Club Venezolano, PO Box 2285, Caracas 1010-A Venezuela.

THE SUNSHINE STATE JACK FILES MEMORIAL CONTEST 1984

All amateurs throughout the world are invited to participate in this contest, the aims of which are (a) to perpetuate the memory of the late Jack Files and (b) to enable amateurs to work stations for the WORKED ALL QUEENSLAND AWARD and other awards issued by amateur radio clubs in Queensland.

Date and Times: Saturday 21st July 0830-1230 UTC (1830-1230K). Saturday/Sunday 21st/22nd July 2330-0130 UTC (0930-1130K).

Divisions and Sections: (1) Stations within VK4 (a) Tx all bands, (b) Tx HF only, (c) Tx VHF UHF only, (d) Tx all bands Club Stations. (2) Stations outside VK4 (a) Tx all bands. (3) SWLs (a) Receive all bands.

Rules: 1 Except as specified below, rules on cross band, cross mode, repeaters, log keeping and submission will be as per 1983 RD Contest.

2 Stations may be worked repeatedly on all bands and modes provided that one hour has elapsed since the previous contact on that band and mode.

3 For scoring purposes on HF, VK4 is divided into two zones, the dividing line being the Tropic of Capricorn. On all bands a bonus of ten points may be claimed for the first contact to a Qld City or Shire on each band during both, NOT each, sessions. Also a bonus of ten points may be scored for each contact with a VK4 Club station.

(a) Stations in VK4:
HF contacts to opposite Zone, five points. Opposite Zone, three points. Outside VK4, one point.
UHF/VHF contacts to other City or Shire, five points.
Same City or Shire, three points. Outside VK4, one point.

(b) Stations outside VK4.
HF, VHF, UHF contacts to VK4 stations, one point. Bonus points apply.
No points for contacts to other call areas.

4 On the various HF bands it is recommended that operation is below 1.820, 3.575, 7.060, 14.175, 21.175, 28.450 MHz.

5 Logs must be submitted before 12th August, 1984 to: The WIAQ Contest Manager, 5 Koomooloo Court, Mermaid Waters, Qld 4218. It would be appreciated if WIA log sheets be used.

6 Awards will be given to the highest scorer in each section. However, should a contestant receive an award in one section he/she will not be eligible for an award in any other section.

7 The Contest Manager's decision will be final and no disputes will be entered into.

VK4AIX, Qld Contest Manager **AR**

CALL AREAS IN SENEGAL

Effective from 1st January 1984 the Senegalese administration has allocated the following callsign prefixes to the eight regions of their country:

6W1: Cap Vert, 6W2: Casamance, 6W3: Diourbel, 6W4: Fleuve, 6W5: Senegal Oriental, 6W6: Sine-Saloum, 6W7: Thies, 6W8: Louga.

Current suffixes remain unchanged.

Adapted from Rad Com, April 1984 **AR**

ADVICE TO FAIR MAIDENS

Verily I say unto you, marry not a radio amateur, for he is a strange being possessed of many devils.

Though he seemeth "touched" he is harmless and thou needest not be wary of him.

He speaketh eternally in dit-dahs and he spelleth his words without vowels, and he wieldeth a big stick which he calleth a slide rule and hath but one bible which he calleth a Handbook.

He talketh always of QSOs and DX, and without end of his loading coil

He knoweth countries only by prefix; he learneth his geography by zones and his directions are great circle bearings

He stayeth up late at nights for reasons known only to him, and thou wouldst not believe his stories if he told you.

There is one key deep in his heart and that is a Vibroplex, and the love letters for which he yearneth are DXCC.

Whilst others prefer swimming and boating, he prefereth to sit inside and work portable, and he braggeth forever to those he hath worked

And when he courteth a damsel, he keepeth a log book and when he maketh a trip he vieweth not the scenery but looketh for antennas.

He picketh his seat in the car by the rig therein and not by the damsel beside him.

Always he carrieth his books with him, and entertaineth his damsel with Ohm's law. Verily, though she expecteth chocolates when he calleth, she openeth the package to find filter chokes

He beholdeth a damsels hand only to measure her fist and he embraceth only to test the strength of the muscle.

He checketh the vibrations of her heart with WWV and he reckoneth her strength of raising antennae

For though he seeketh to acquire a second op, he attendeth the Wedding ceremony only to record it on tape; he goeth on a Honeymoon only to visit Radio Clubs, he returneth home only to pound brass

Surely goodness and mercy will follow this man, for he will need it; there may be no improvement and he will need help forever

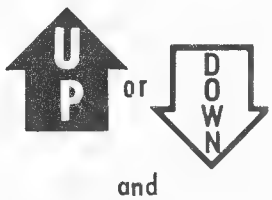
Amen

AR

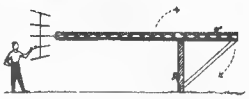
SKYTRIM

A TOWER OF STRENGTH

CRANKS



and



TILTS OVER

Tower head accessibility from ground level makes installation and maintenance of antennas etc., a breeze!

For details, contact:

Communication Towers Australia Pty Ltd

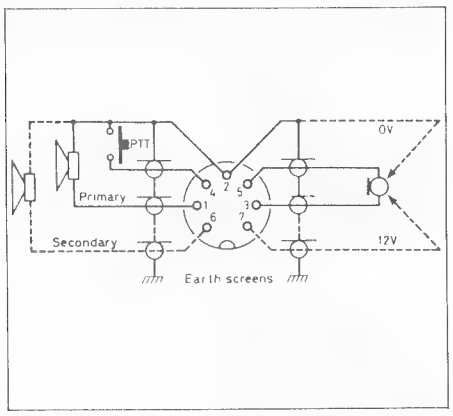
P.O. Box 1201,
Parramatta, N.S.W. 2150
Tel: (02) 635 6572
Cables: AUSSITOWER Sydney

WICEN NEWS

Ron Henderson VK1RH,
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT. 2615.

A standard connector for amateurs?

Amateur radio equipment, unfortunately, has so far exhibited little consistency in the connectors used for microphone and speaker accessories. Dr Peter Best, G8CQH, controller of the Solihull & Chelmsley Wood Raynet Group, has found the lack of standardisation a handicap for emergency communications, and has introduced a "standard" based on DIN sockets. He feels this would benefit the hobby generally if it could achieve wide acceptance; it has already proved of great value during local Raynet exercises, and has overcome many of the operational and administrative problems that arise when a group of people depend on equipment owned by individuals.



He writes: "The scheme uses three elements: (a) a "rig-adapter", (b) a "line", and (c) one or more accessories or peripherals, all furnished with DIN connectors. The seven pin DIN socket (see Fig 1) defines the complete scheme, allowing 3-, 5- (180) and 7-pin DIN-type plugs to be used as appropriate. The "rig-adapter" is a short length of cable terminated in plugs to suit the specific transceiver, and conveying microphone, push-to-talk and loudspeaker signals to a DIN socket as a standard presentation. The "line" is a signal cable, many metres long if required, having four individually-screened conductors to carry the microphone, PTT and LS functions from a five-pin plug to parallel-wired sockets mounted either in a small box or in the plate of a cable reel.

"Accessories or peripherals can take a variety of forms, depending on the desires and ingenuity of the owner. Typically, these might be a microphone with integral PTT, a variety of headsets which may have boom microphones, separate PTT switches including footswitches (as "trample-to-talk" or TTT) and modified telephone handsets as a variant on the speaker-microphone concept. These would be wired to the scheme and furnished with a DIN plug of sufficient pins to suit the functions offered by that peripheral. Speakers alone take a three-pin plug (with pin 3 unused) while a microphone with integral PTT takes a five-pin plug (with pin 1 unused). Stereo headphones, with or without boom microphone and PTT, take a seven-pin plug since the scheme purposely allows such headphones to retain their separated channels for other applications. Lightweight headphones for hi-fi etc double as excellent accessories for radio operation.

"The adoption of a standard connector and pin arrangement throughout the scheme ensures that all peripherals owned by one individual become interchangeable and may be used with any transceiver (or audio system) for which a specific rig-adapter lead has been made. Likewise, this interchangeability extends to peripherals of different ownership for occasions (frequent in Raynet and contest groups) when two or more operators share the operation of a station. To achieve this interchangeability and to maximise the options which can be exercised within it, the pin assignment and cable specifications for the scheme are specific and not an accident of consensus arbitration.

"Good electrical practice requires that high- and low-level signals do not share a common earth return. Hence, throughout the scheme the microphone (a low-level signal) has two screened conductors, and only in the rig-adapter or at the transceiver connections may the signals of pins 5 and 2 be made common. Also, maximum possible separation of pins transporting high- and low-level signals through connectors is achieved with the primary speaker at pin 1, and the secondary speaker at pin 6 for stereophones (where primary becomes "left" and secondary "right"). The PTT, being normally an earth-referred, non-fluctuating high-level signal, is at pin 4 on the high-level "side" of the connectors. Pin 7 is allocated as a nominal 12 V connection with respect to earth-screens (pin 2) to supply active microphones (eg electret types) and certain low-current indicators (eg "on-air" LEDs).

"Only the first five pins convey all the minimum essential signals for controlling a transceiver during fixed-frequency operation, so that peripherals and lines wired to this scheme give the operator freedom of movement in his shack and beyond. The use of individually-screened cores (eg RS Component 367-577) ensures minimum crosstalk in long cable runs; an essential consideration if the peripherals are ever to perform satisfactorily in an intercom mode when the audio output is not depowered during "transmission". Transceivers which require a series mic-PTT circuit can be accommodated in the scheme by strapping pin 5 to pin 4 (instead of pin 2) "behind" the rig-adapter DIN socket. Normally, pins 1 and 6 are strapped together at all sockets, and safety-practice requires the exposed metalwork of boxes or cable reels to be connected to the earth-screens (pin 2) at one point."

Adapted from RADIO COMMUNICATION February 1984

MAGAZINE REVIEW

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General (C) Constructional (P) Practical without detailed constructional information. (T) Theoretical (N) Of particular interest to the Novice

73 MAGAZINE April 1984 Simple Microwave Receiver (C) Four Band HF Mobile Whip (C) Ishmod's DXpedition (AF) Solar Power Field Day (G) Op Amp Filter Design (GT)

ORBIT No 15 October 1983 General satellite information Antenna Design etc

HAM RADIO. January 1984 VHF Amplifier Power FETs (TC) Noise Figure Measurement (G) Verticals over REAL Ground (T) Satellite Weather Pictures (C)

HAM RADIO. February 1984 High Frequency Receiver Performance (G)

RADIO COMMUNICATION. March 1984 Dynamic Range Intermodulation and Phase Noise (T)

TWO WAY. March 1984 For those who don't know what is the UHF CB scene — repeaters and all — this will prove interesting

73 MAGAZINE. May 1984 Annual Antenna Issue Nine new articles (G)

Stolen Equipment Register

Equipment Stolen or Lost

Icom 1C490 A 70 cm, Serial No 16101192 from VK3BVO

Icom 1C22S, Serial No 15777 from VK3YXX on 26/4 83

Icom 2A, Serial No 122–15146 from VK3CRH on 21/6/83

IC 2A 2m handheld transceiver, IC 4E 70 m handheld transceiver, 2 spare battery packs, IC 2 A — S/No 12213830, IC 4 E — S/No 18103021 from VK3YOD on 2/12/83

Icom 1C551–D and Icom 1CPS20, Serial No 10101966. Model 1C551–D 6 m transceiver, Serial No 99003878 Model 1CPS20, power supply from VK3YSG on 1/1/84

Icom 1C–45A, Serial No 18351005 With memory back-up unit from VK3KJC on 22/2/84

Icom 1C–22A, Serial No 8853, from VK3ZU on 3/5/84

Kenwood 2m transceiver, Serial No 1050780 Model TR/9000. Leader signal generator, Serial No 1081098 Model LSG–16. 12 V power supply Vicom SWR Bridge Logic probe side cutters, Wire stripper, Set of files, Wire wrap tool, CRO probes, Coax ext cables. Tin of integrated circuits from VK3YSG on 1/1/84

Trio cathode ray oscilloscope. Serial No 10–20171 Model CS–1560A2 from VK3YSG on 1/1/84

Yaesu FT7, Serial No 81090839 from VK3BYK on 28/6/83

Yaesu FRG7, Serial No 299 L 26099 from VK3ZLY on 28/7/83

Yaesu FT290R, Serial No IL081321 from VK3KJC on 22/2/84

Kenwood TS930S, Serial No 3050176 from VK7JG on 13/1/83

Yaesu FT480R, Serial No 1H12069 from VK1ZUR.

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
FEDERAL EMC CO-ORDINATOR
38 Wattle Drive, Watsonia, Vic. 3087

EMC Standards

Members of the Amateur Radio Service, and other careful users of the electromagnetic spectrum, can expect very little relief from the growing interference problems until the designers, manufacturers and importers of domestic entertainment equipment and consumer products are forced by law to consider EMC as a standard parameter for their products. The new Radiocommunications Act, number 130, is the legislation on which the new radiocommunications Regulations and Standards will be based. The Act itself can have little effect without suitable and effective regulations and standards.

There comes a time in every civilisation when, due to many complex factors, it becomes necessary for governments to provide a degree of control over our lives. Thus we have the clean food and drug law, the automobile anti-pollution law, the environment protection law, the clean air law and many others, all of which are designed and intended to improve and maintain our health and welfare.

Electronic communications, computing and control systems, which are having an increasing effect on our lives, health and welfare, are developing and multiplying at a dramatic rate, threatening us with an increasing electromagnetic pollution problem, because, in general, the various electronic products on the market are not designed or constructed to work in harmony with each other.

Electronic products which can work in close harmony, without causing interference to one another, are said to have electromagnetic compatibility. EMC is the answer to EM spectrum pollution. Unfortunately, designers, manufacturers and import agents, especially those involved with domestic entertainment equipment and consumer products, do not consider EMC to be a tangible feature, that can be easily demonstrated to the consumer as desirable. Therefore EMC does nothing to improve their profit margin —quite the contrary, they claim.

With such a negative attitude towards the electromagnetic spectrum, which is one of our most important natural resources, it is not hard to see that, in quite a short time, this resource could become totally polluted and useless. This would indeed be most serious for civilisation as we know it today, for our daily lives are becoming more and more dependent on this FINITE natural resource.

Fortunately for Australia the government has produced what appears to be a most effective new Act on which to base EMC rules. The Australian Department of Communications is, at this time, in the process of drafting the associated regulations and standards for the new Act. The correct drafting of these is most important to the effective operation of this new, and most important, Act. As we move towards 21st century high-technology, this new Act will have an ever increasing, direct and indirect, effect on the lives of all Australians.

The Standards Association of Australia has, for more than thirty years, had an important role in developing occupational safety and health standards. Its prime concern has been to develop standards which help improve safety in the work space.

Australian safety standards can generally be classified into the following types: *standards for safety of equipment, plans and structures; codes of recommended practices for safety at work; and standards for the design and use of personal protective equipment.*

There are more than 3500 Australian standards covering technology. A detailed listing of occupational safety and health standards is available free from the association's offices in every capital city.

Most of these standards were developed in response to community requests for measures to help control what were often considered at the time to be areas of new and emerging technologies.

For plant, equipment or structures which may present hazards, there are design and installation codes — sets of rules which lay down the minimum requirements that should be observed if hazards are to be kept to a minimum practicable level. The most familiar example is probably that of the SAA Wiring Rules, which include requirements for electrical installations intended to minimise the risk of electric shock and of fire or explosion.

There are of course many other codes for such equipment as boilers and pressure vessels, cranes and hoists, lifts, and other equipment, and for particular materials such as explosives, oil, fuel and LP gas. Such codes usually acquire statutory force through reference in regulations.

For areas of accident prevention practice in which specific minimum requirements would be inappropriate there are the codes of recommended procedure.

The increasing influence of technology in industry has been accompanied by a progressive realisation of possible adverse effects, and has led to an increasing community demand for the screening of new technologies and the development of appropriate controls. The community has also developed far greater expectations for safety and health at work and for acceptable standards in the work place.

Regulatory authorities, industry and the community all look for early guidance on removing hazards introduced by technology.

A few examples of new safety standards involving new technologies in industry include those applicable to the use of electrically operated medical equipment, underwater diving operations, respiratory protection, cryogenic fluids and radiation.

The "Australian Standards" Mark on products, is an assurance to the purchaser that the product has been made to comply with a relevant Australian standard. It also means that the quality control activity under which the product has been manufactured is acceptable to the quality assurance certification section of the SAA and in fact, is subject to this third party independent audit.

This may indeed be true for many areas in which the SAA is involved. However, EMC is without doubt the most complex and controversial subject in which the SAA has ever been involved. This is illustrated when one observes how long the Association has, in its delineation of electronic standards, left reference to immunity, blank.

Most of the standards produced by the SAA are not mandatory. This may be fine for many subjects, and in many areas, but for the highly complex and controversial area of EMC, voluntary standards have, world wide, proved to be "wishy-washy" and ineffective.

The Department of Communications, as the Australian Government's electromagnetic spectrum control authority, has a most difficult and urgent role to perform in order that Australia may proceed smoothly into the 21st century's high electronic technology. Completion of this difficult task will necessitate that the Department administer EMC from firm ground. Good, efficient and workable mandatory EMC regulations and standards are required as soon as possible in order to ensure that spectrum pollution does not get further out of control.

The technical material for the formulation of EMC standards is available from many

reputable overseas countries who have vast experience in this field. The Standards Association of Australia considers the following criteria to be prerequisite in formulating standards: *objects, form of regulation, main areas of concern, availability of specifications and standards, method of application of standards, sources of international and local standards, need for a broad base, compromise, totality of argument and quality of technical basis.* However, it is not necessary for Australia, or the SAA, to start from square one! Much of the available overseas material requires, at the most, just slight modification to suit Australia. It is not essential for Australia to produce perfect standards, in every area, the first time. EMC is a highly complex subject and slight modifications can be made, as necessary, in practice. West Germany are still making adjustments to their EMC laws. Australia produced a new Radiocommunications Act in a reasonable period of time — let's not wait around for years to give teeth to this long awaited and much needed EMC legislation.

Under the new Act the Minister for Communications has the power to call for draft submissions for standards, as deemed necessary by his department, to cover all aspects related to the supervision and management of the electromagnetic spectrum, and allied areas. The Minister has the power to call for draft standards from any suitable organisation, not just the SAA. There is no prerequisite that a, government approved, mandatory standard must be an SAA production. A non Association standard could of course be adopted by the SAA at a later date.

The Act clearly states that when considering a standard, the Minister must make it available for public comment prior to its promulgation. This is an area where the Amateur Service as a whole and, individually, should and must provide a very comprehensive input.

The Amateur Service is one of the largest, if not the largest, operator of two-way radio communications equipment within the community. Amateurs are therefore very closely associated with, not only the technical, but with the social, domestic, political and legal difficulties encountered due to the EMC problems inherent in a wide range of consumer products. Though the range of electronic based consumer products is growing at an accelerating rate, the Australian Consumers' Association, who are responsible for the testing of a wide variety of products and services, and whose reports are available to its members through "Choice" magazine, are not able to test products for EMC, due to lack of suitable and recognised Australian standards.

Standards with an international base, and international co-operation on standards, are most desirable. The Canadian Standards Association's Steering Committee on electromagnetic compatibility (EMC) in an in-depth study of radio interference and its impact on Canadian use of sensitive electronic and electrical equipment, has concluded that standards are needed incorporating guideline limits both as to levels of radio interference which are tolerable and the levels of immunity which must be built into electrical/electronic systems. The committee has concluded that the failure to develop and apply appropriate technical standards could result in serious deterioration in most Canadian electronic systems, and could increasingly threaten Canada's position in domestic and world markets.

It is not only important for Australia to have good, efficient and effective EMC standards based on international codes of practice, but the standards must be SEEN to work. We should not become neurotic in an effort to cover every aspect immediately, — to dot every 'I' and cross every 'T' of this most complex, controversial and ever changing subject. The best we could hope for, would be to cover as much as possible with the first attempt and make adjustments as we go along. As mentioned earlier, West Germany are still modifying their most necessary, highly complex and very comprehensive EMC laws which are, incidentally, retrospective.

Although the Australian Act is, unfortunately, not retrospective, it does contain a great many references to EMC/EMI. The main problem areas, immunity, incidental radiation and EMI problems to and from non communications equipment, are covered by the Act in Part 2, section 9, sub sections 6, 7 and 8.

Sub section 6. *"Standards relating to transmitters other than radiocommunications transmitters" (incidental radiators — PLI, auto ignition, industrial processes, etc).*

Sub section 7. *"Standards relating to receivers" (immunity — TV receivers, VCR front ends, etc).*

Sub section 8. *"Standards relating to radiosensitive equipment" (immunity and incidental radiation — Hi Fi and audio equipment, VCR tapes and heads, intruder alarms, etc).*

AR

IR ..... ARE YOU?

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For those who find it difficult to visualise the voltage drop along a conductor the following explanation may help to increase the confusion

Twelve happy little Volts, rushing down the line;
Crashed into some travelling holes, then there were nine.

Nine busy little Volts, running rather late;
Took the wrong short circuit path, then there were eight.

Eight worried little Volts, feeling rather sore;
Met a pack of savage Ohms, then there were four.

Four weary little Volts, getting rather blue;
Tried to jump a valence gap, then there were two.

Two dead beat little Volts, strength was almost done;
Tried to light a six Volt lamp, then there were none.

AR

QSP

SIX METRES

Until November 1983 VK amateurs could not legally transmit between 50 and 52 MHz. The WIA had been negotiating with DOC for some years for conditional use of the segment 50 to 50.15 MHz, but representatives of the TV broadcasters were reluctant to agree to any sharing of Channel 0 (45-52 MHz) which might increase the risk of TVI.

In November it was announced that a concession had been agreed to whereby amateur use, not just of 50-50.15, but the whole 50-52 MHz segment could now be allowed without restriction, BUT ONLY OUTSIDE THE TRANSMISSION HOURS OF ANY CHANNEL 0 TV STATION.

If there is a Channel 0 TV station transmitting, the situation is quite different. Because there are no Channel 0 stations in VK5, 6 and 8 the fortunate VK6s may still use the whole band 50-54. But between 50.15 and 52 MHz they may use only SSB at not more than 100 watts PEP. In VK8, a little closer to the Brisbane Channel 0, the only operation permitted below 52 is from 50 to 50.15 with 25 W PEP maximum.

However, VK5 and 7 are too close to the Sydney and Melbourne Channel 0 stations to be allowed below 52, and of course VK2, 3 and 4 have no chance at all. But from the beginning of 1985 the Melbourne and Sydney stations will cease to use Channel 0. Then, from 1st January, 1985, amateurs in VK5 and 7 may use 25 W PEP max between 50 and 50.15 while Channel 0 is in use.

The remaining TV stations on Channel 0 are at Brisbane and Wagga, so VK2, 3 and 4 STILL CANNOT USE 50-52 MHz WHILE THESE STATIONS ARE TRANSMITTING. (52-54 MHz is of course unaffected.)

It is possible that some VK2, 3 and 4's have been tempted to work DX below 52MHz while Channel 0 TV is active. If so, they not only run the risk of action by DOC, but may cause the present concessions to be withdrawn from everyone. The VK6's would be most unhappy if they lost 50-52MHz because some impatient "Eastern Staters" ignored the restrictions.

It has been WIA policy, for as long as Channel 0 has existed, to negotiate for its phasing-out in favour of UHF. This policy is beginning to achieve results. The Melbourne and Sydney TV stations which will relinquish Channel 0 at the end of 1984 will then operate solely on UHF. The concept of controlled spectrum sharing has now been accepted. If experience during 1984 shows that the amateur movement is responsible in its attitude to the sharing conditions there is a possibility of further relaxation. If 50-52 MHz is again to be exclusively amateur, it will depend critically on how fairly we play the game according to the rules.

AR

SPREAD THE WORD
Join a new WIA member now!!

EDUCATION NOTES

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This month Education Notes are another test exam paper — the AOCP.

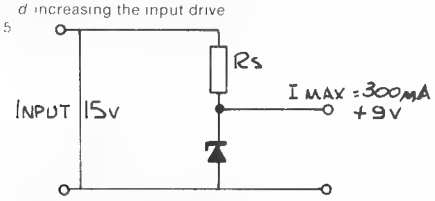
TRIAL AOCP EXAM, AUGUST 1982

1 The unit of capacitive reactance is the
a Farad
b Henry
c Ohm
d Watt

2 Two diodes in series may be used instead of a single diode in a rectifier circuit when
a a high level of filtering is required
b better voltage regulation is required
c a current more than the rating of the single diode is expected
d the inverse voltage is expected to exceed the ratings of one diode

3 An amateur transmission causes a crosshatch pattern on a nearby television receiver. The type of transmission being radiated is probably
a VHF frequency modulation
b VHF single sideband
c SHF television
d HF CW

4 A transistor in a common emitter circuit has a β of 100 at 1.8 MHz and 1 at 250 MHz. It could be better used as a VHF amplifier by
a increasing the emitter voltage
b decreasing the base emitter bias
c using a common base circuit
d increasing the input drive

5


The value of the series resistor should be
a 0.2 ohms
b 20 ohms
c 50 ohms
d 200 ohms

6 A transformer is used to match the output from an amplifier to an 8 ohm speaker. If the impedance of the primary is 200 ohms, the turns ratio Primary : Secondary must be
a 25 : 1
b 1 : 5
c 1 : 16
d 5 : 1

7 The function of a "limiter" in an FM receiver is to
a keep the band width within acceptable limits
b remove any AM from the signal before detection
c limit the deviation to 5 or 15 kHz for narrow or wide band mode
d limit the amount of RF amplification to improve audio quality

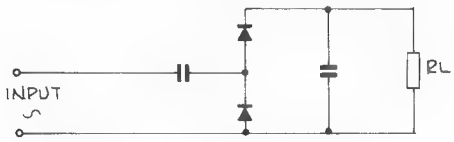
8 The specifications for a typical amateur band receiver may include, SSB 6 dB @ 2.4 kHz, 60 dB @ 4.4 kHz. These figures specify
a image rejection
b sensitivity
c selectivity
d frequency stability

9 The function of a buffer amplifier stage in a transmitter is to
a amplify the audio frequency before it enters the mixer
b protect the oscillator stage from the effects of a varying load
c amplify the two sidebands after the carrier has been suppressed
d filter the "chirp" produced when the oscillator stage is keyed

10 A meter has a full scale deflection of 1 mA and an internal resistance of 10 ohms. To allow it to read a current of 100 mA you must add a resistor of:
a one ohm in series with the meter
b one hundred ohms in series with the meter
c one thousand ohms in parallel with the meter
d less than one ohm in parallel with the meter

11 A frequency multiplier stage will normally
a require neutralisation to prevent feedback
b be more efficient if multiplying by four than if multiplying by two
c have the output circuit tuned to an exact multiple
d be operated in class A

12 The output voltage across R_L will be



a DC and equal to the RMS AC voltage input
b AC and equal to twice the peak AC voltage input
c fully regulated DC
d DC voltage about twice the peak AC voltage input

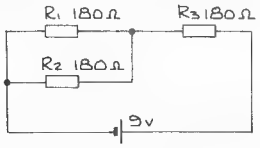
13 Bleeder resistors in power supplies
a allow discharge of filter capacitors after use
b should be placed immediately before the rectifier stage
c should have a value of at least 10 000 ohms per volt
d are only necessary with a capacitor input filter system

14 The quality factor of a series resonant circuit is
a increased if the total resistance is increased
b determined by the reactance and the resistance of its components
c an indication of the accuracy of the ratings of its components
d a measure of its efficiency in rejecting the resonant frequency

15 A receiver has some of the output of the detector stage fed back to the first IF stage. The purpose of this is to provide
a neutralisation to prevent oscillation of the detector
b a tone to assist in detection of CW
c automatic gain control
d a noise limiter circuit

16 When a 100 watt carrier is 100 percent amplitude modulated by a pure audio tone the power distribution will be
a 50 watts in the carrier and 25 watts in each sideband
b 66 watts in the carrier and 17 watts in each sideband
c 100 watts in the carrier and 25 watts in each sideband
d 100 watts in the carrier and 50 watts in each sideband

17 A single sideband suppressed carrier signal is
a phase modulated
b frequency modulated
c digitally modulated
d amplitude modulated



The power in this circuit is distributed such that the dissipation of
a R_3 equals twice that of R_1 or R_2
b R_1 is equal to one quarter of R_3
c R_1, R_2 and R_3 are equal
d R_2 is equal to one third of the total

19 In a triode vacuum tube that is "biased to cut-off"
a electron flow occurs only during the negative half of the input cycle
b electron flow from the anode is prevented by the bias on the grid
c the output wave form is an amplified version of the input wave form
d anode current flows when the input signal drives the grid positive

20 To observe the quality of single sideband transmission the best instrument to use would be a
a dip meter
b television set nearby
c cathode ray oscilloscope
d peak power meter

21 The impedance at the input to a mobile antenna is usually designed to be about:
a 50 ohms
b 72 ohms
c 35 ohms
d 5 ohms

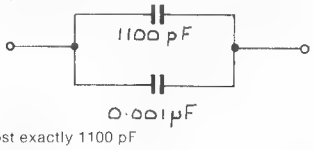
22 A 12 volt DC SSBSC transmitter with a phase-locked loop frequency source has a power supply which cannot maintain 12 volts under full load. This may result in
a amplitude modulation of the suppressed carrier
b failure to suppress the carrier
c failure to remove the unwanted sideband
d frequency modulation

23 Yagi antennae are usually described as having a certain gain and
a a broad bandwidth
b a specified front-to-back ratio
c a high skin effect
d an omnidirectional propagation pattern

24 A radio wave is said to be "horizontally" polarised when
a the electric lines of force are horizontal
b it is travelling parallel to the earth's surface
c the wave fronts are horizontal
d it is being radiated at an angle less than 45 degrees

25 The time constant of a circuit is
a measured in phase degrees
b calculated from the capacitance and resistance values
c related to the capacitive reactance at resonant frequency
d The time required for the capacitor to become fully charged

26 Total capitance in this circuit is



a almost exactly 1100 pF
b 0.1101 pF
c 2100 pF
d 0.00111 pF

27 Electron flow from source to drain in a Field Effect transistor is controlled by
a bias applied to the gate
b electron flow through the emitter — gate junction
c electron flow from gate to collector
d the voltage across the base — gate junction

28 High frequency parasitic oscillations
a can be cured by insertion of parallel tuned traps in the antenna
b may be caused by stray capacitance and inductance in the circuitry
c are always harmonically related to the transmitting frequency
d are only likely to be a problem when double sideband full carrier emission is being used

29 The feed point impedance of the 3.6 MHz dipole which is suspended five metres above the ground is
a 72 ohms
b 50 ohms
c dependent on the ground conditions
d likely to be the same if the dipole is raised to twenty metres above the ground

30 An absorption wave meter can be used to
a absorb undesirable harmonic frequencies to prevent their radiation
b measure the approximate frequency of a transmitted carrier signal
c absorb out-of-band frequencies by being set to the band limits
d measure the resonant frequencies of inductors before they are built into the circuit

31 The SWR reading at the transmitter output reads 1.05:1 but is 4:1 at the input to the antenna. This indicates that
a very high quality coaxial cable is being used
b the transmission line is making the antenna resonant
c the transmission line is well matched to the antenna
d the power loss in the transmission line is high

32 A variable crystal oscillator (V.X.O.) generally can be operated over a narrow frequency range equal to about
a 10 kHz
b 10 percent of the crystal's frequency
c 1 percent of the crystal's frequency
d 0.025 percent of the crystal's frequency

33 A preferred value resistor when tested with an ohm meter reads 13 000 ohm. Its colour code will most likely be
a brown, red, orange, silver
b brown, orange, red, silver
c brown, red, red, gold
d red, orange, orange, gold

34 Electrostatic shielding may be used in a transformer
a to reduce eddy currents in the core
b to reduce hysteresis losses
c between the primary and secondary windings
d around the secondary to prevent it going into oscillation

35 Addition of an extra amplifier stage to a transmitter raises the output power from 10 watts to 40 watts. The rise in signal strength received by a listening station should be:
a 3 decibels
b 6 decibels
c 10 decibels
d 40 decibels

36 "Chirp" on a CW transmission usually is caused by
a an ineffective key click filter
b insufficient load isolation for the oscillator stage
c the presence of unwanted harmonics in the radiated signal
d keying the amplifier stage instead of the oscillator

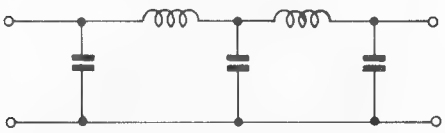
37 When using the 3 5 MHz band at night, the skip distance will depend on the
a height of the F layer
b density of ionisation of the D layer
c polarisation of the signal
d height of the radiating antenna

38 An important difference between high definition television (ATV) and slow scan television (SSTV) is
a SSTV is usually on VHF, ATV on HF
b SSTV does not require a high sensitivity receiver. ATV does
c bandwidth
d the scanning rate of SSTV must be speeded up for reception on unmodified commercial television sets

39 A widely used amateur antenna which gives an omni-directional pattern in a horizontal plane is the
a horizontal dipole
b Yagi
c vertical ground plane
d cubical quad

40 The velocity of radio wave propagation in coaxial cable is usually about
a 0 66 times the speed of light
b 0 98 times the speed of light
c the speed of light
d 300 000 000 m/sec

41



This device could be used
a at the input to a television receiver
b as a high pass filter
c as a harmonic multiplier to match a feedline to an antenna
d as a low pass filter

42 In common emitter circuits the base bias voltage is often obtained from the power supply by
a back to back silicon diodes
b back to back zener diodes
c a dropping resistor in the collector circuit
d a potential divider network

43 A linear amplifier must be used
a where high output power is required
b where increased efficiency is necessary
c in the RF amplifier stages of an SSB transmitter
d in the mixer stages of an SSB transmitter

44

A circuit using this device is likely to be
a used as a keying device in a simple CW transmitter
b capable of small shifts in resonant frequency
c used as a "trap" in a multiband antenna
d a voltage regulator stage in a DC power supply

45 Spurious emissions from a transmitter may be reduced by
a using a choke input filter in the power supply
b changing the power amplifier from Class B to Class C operation
c maintaining the modulation level above 95 percent
d neutralising the power amplifier stage

46 A mobile FM VHF receiver is experiencing a persistent hash on every signal received while the vehicle is mobile The problem is most likely to originate in the
a alternator
b wheel hubs or brake pads
c voltage regulator
d starter motor

47 In using a CRO to observe a received CW signal it is necessary to
a amplify the signal before applying it to the Y plates
b feed the signal directly to the X plates
c switch off the timebase generator
d lengthen the signal pulses and shorten the spaces so that more pulses can be observed

48 Of the three common circuit configurations using bipolar transistors the common emitter circuit has the
a highest input impedance
b lowest output impedence
c highest power gain
d lowest current gain

49 Amateur transmissions via satellites are generally at 29 MHz or higher because
a better refraction is obtained when the satellite is near the horizon
b of absorption in the ionosphere
c there is too much static interference at lower frequencies
d of false reflections at lower frequencies

50 A dip meter is a useful test instrument because
a it cannot be tuned
b it does not require the circuit under test to have voltages applied
c it gives a readily detected dip in reading when it absorbs power
d it can function as an accurate frequency meter

Answers following Hamads this issue. **AR**

QSP

WORLD AMATEUR RADIO DAY

A very successful day with media coverage and general public relations for amateur radio was attained by RSGB on World Amateur Radio Day — 18th April, 1984.

GB2HQ made contact with hundreds of stations, whilst over thirty local radio stations and BBC Radio 4 contacted RSGB Headquarters to take interviews for broadcasting.

from RSGB News Bulletin
19th April, 1984
AR

AT LAST! AN ACCURATE 70cm. POWER/VSWR METER THAT REALLY WORKS—AT A PRICE THAT YOU CAN AFFORD!

TWO TYPES AVAILABLE.

TYPE 1. 50W/7.5W. N CONNECTORS.
TYPE 2. 7.5W/1.25W. BNC "

EACH TYPE HAS TWO FORWARD AND TWO REFLECTED POWER RANGES, PLUS A DIRECT READING VSWR SCALE, INSTRUCTIONS AND CHART.

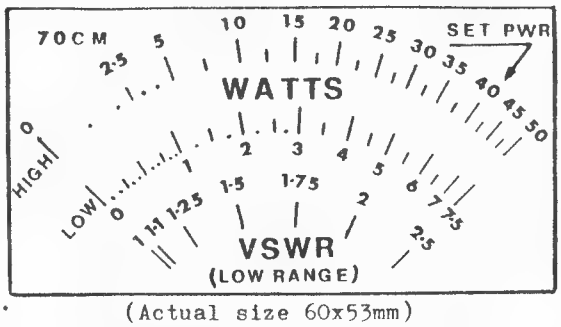
The meters will work outside the specified band. They read approximately 5% high at 450MHz and 8% high at 477 MHz.

PRICES.
TYPE 1. $94 + 20% S/T = $112.80.
TYPE 2. $90 + 20% S/T = $108.00
Post and packing $5 extra.

WE ALSO MAKE.
1269, 1296 & 1700MHz Long Loop Yagi's. 1,2 & 4 Bay with splitters. Soldered copper. (From $65 single).

3cm WG Assembly, with 3dB coupler, 22dB horn, Gunn Oscillator & IN23WE Mixer (see AR Nov.83) - $125.
All parts available separately.

Educational Microwave Equipment.



(Actual size 60x53mm)

WE SUPPLY (NEW EQUIPMENT).

Waveguide, Flanges, Gunn and Detector Diodes. Well priced. Good range in stock.

PTFE PC Board. ER 2.5 double sided 1oz. copper. .0625" 14c/sq. cm.

Various types of connectors for semi-rigid coaxial cable.

SAE for price list.

SPECIFICATIONS.

FREQ.RANGE .... 430 - 442 MHz.
CALIBRATION FREQ. ... 436 MHz.
IMPEDANCE ..... 50 Ohms.
DIRECTIVITY .... 30 dB min.
INSERTION LOSS . 0.3 dB max.
VSWR ..... 1.08 max.

ACCURACY ..... ± 5% at FSD on all switched ranges. Down scale accuracy is superior to competitive instruments.

REFERENCE LEVEL for VSWR scale is 41.2W, otherwise the chart supplied is used to determine the VSWR.

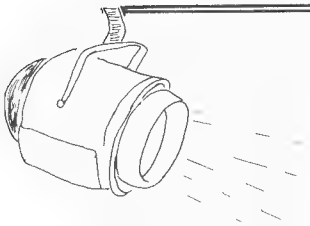
SPECIALS.

Used, working, Gunn Diodes for experimenting & getting into microwaves - $1 per mW. Detector Diodes, used $1 each. Both tested before delivery.

0.141" Semi-rigid coaxial cable. Used, but in good condition. Reduced to $3/m. While stocks last.

Sales Tax @ 20% included on applicable items.
Post and packing extra.
73 de VK5ZO.

MICROWAVE DEVELOPMENTS.
P.O.BOX 274, MOUNT BARKER. SOUTH AUSTRALIA. 5251. Ph. (08) 391 1092.



SPOTLIGHT ON SWLing

Robin Harwood, VK7RH
5 Helen Street, Launceston, Tas 7250

As I was tuning just below the 10 MHz amateur allocation recently, in the allocation normally reserved for aeronautical communications, I came across a station broadcasting in Spanish in 10.040 MHz. It was an official broadcasting outlet, operating in a clandestine manner by varying a few kilohertz either side of that channel. Identifying as "La Voz del CID" frequently, the station had musical programming ranging from Cuban music from the 40s with rhumbas and sambas to today's Latin and American Top 20 tunes. Interspersed between were short commentaries on such topics as the El Salvadorean election result and the Soviet Olympic boycott.

The station is operated on behalf of the anti-Castro "Cuba Independiente Y Democratica" Movement which has been sponsoring block programming over several Central American and Florida commercial stations in Spanish. Recently, the Dominican Republic stopped the commercial station R Clarin, based in Santo Domingo, from carrying CI programmes after reportedly receiving complaints from Havana.

From my monitoring observations, I think they are broadcasting from the Caribbean, juding on propagation from other regions. I have first observed the station around 0800 UTC and it holds up until around 1000 UTC. The signal level drops appreciably after 0925, yet propagation from Central America usually is starting to peak at that time. The station does not broadcast daily and has only been heard on Thursdays and Saturdays here in Tasmania. Naturally, the station does suffer heavy interference from utility services that normally use the channel. They have a rapid-fire delivery style, making it a little difficult to comprehend sometimes, yet it is quite a distinctive presentation style, being different from many South American stations you may have heard within the Tropical bands.

With the recent authorisation by the US Congress for the establishment of Radio Marti, an official station that will air anti-Castro programming primarily on MW, you can expect a probable increase in the amount of deliberate jamming within the Western Hemisphere. R Marti will be similar to the R Free Europe/R Liberty and utilise existing VOA transmitters at Marathon, Florida and will come under the control of the VOA in Washington, a proposal that has angered some of the Cuban exile groups. They feel that it being under USIA control, effectively blocking participation from their organisations, leaves them no alternative but to commence clandestine operations, and in instances to continue doing so. The Federal Communications Commission has been engaged in a cat and mouse game with several operators, several of whom are operational occasionally on our exclusive amateur allocation between 7.000 and 7.100 MHz. Several have been tracked down, raided, equipment seized and reportedly, in some instances, amateur licences revoked.

It is not surprising that with the current instability in the Caribbean and Central American region, many other clandestines have been noted. Recently the Nicaraguan Official Radio Sandino in Managua opened an outlet on 6.199.9 MHz because the clandestine "La Voz of Sandino" was operating on 6.215 MHz. Radio Sandino is coming in well here from 0945 UTC while the anti-Sandanista clandestine is very weakly audible, being frequently drowned out by maritime mobiles who use that channel for their intership communications. It is said that the American CIA backs the clandestine.

Whether the same is true of "La Voz del CID", I cannot say at this juncture. Interestingly, I have noticed that efforts are being made to jam the broadcasts, causing the station's frequency to vary from day to day. However, the practice of operating closely to an official channel is not new, the idea being, listeners tuning for their normal programmes will come across the clandestine accidentally eg the programmes from the anti-Khomeni R Vatan in Persian are just 5 kHz up from a normal Iranian Home Service shortwave relay. Some are reluctant to jam these because such interference would affect the coverage from the official stations as well.

Another practice, used by stations engaged in "black" clandestine programming, is to lift some of the programme from the official network so that a casual listener would feel that he is listening to his normal network, and insert comments or information hostile to the official position. Several clandestines eminating from the USSR reportedly are engaged in this style in Chinese language broadcasts. This technique was first practised by the British against Nazi Germany during World War II. To be successful in this technique, such operations would have to be close to the normal official frequency.

With the rather fragile international situation at present, especially since the rapid deterioration in relations between US and the USSR, I have observed a marked increase in broadcasting output. Soviet Foreign Service senders have been observed operating on channels normally occupied by BBC and VOA transmitters. For instance, the VOA relay from the Philippines on 11.715 MHz in English to this region, has now a relay of the Soviet domestic FS outlet and the BBC Far Eastern Relay has also a Soviet "Mayak" programme on 11.750 MHz co-channel. The small FEBC transmitter in Manila, Philippines on 21.515 MHz, rated at only a kilowatt, used to have almost exclusively the channel but now is submerged under a more powerful signal from Radio Moscow's World Service.

The rather delicate situation internationally is also reflected in the programming area as well. From 9th June, the popular BBC W/S current affairs programme was extended from only being five days a week to daily. The programme is now aired daily at 0509, 0709, 1309 and 2009 UTC with up to date news analysis and background information on world events. The programme is live, with frequent updates as events unfold. This has meant some programme re-arrangement with the only significant casualty being "Listeners' Letterbox" with Margaret Howard normally at 0515 Sundays. This has been moved to 0145 Saturdays, not a very convenient time for us on Australia's east coast. The releases at 1415 Fridays and 2315 Saturdays remain unchanged. The weekly programme "From Our Own Correspondent" has been shifted to 1015 Saturdays from 0715 Sundays. "From The Weeklies" is now on fifteen minutes later at 0730 UTC on Saturdays.

For many years now, The BBC Monitoring Service at Caversham Park, has edited a weekly bulletin of "World Broadcasting Information". It has been of invaluable assistance to many DX and shortwave clubs as well as other broadcasting organisations. Caversham has served notice to subscribers that this service will cease as from June 1985. due to the increased costs compiling and editing the bulletin. At present, the subscription is $87 annually. It is hoped that the resources of the BBC Monitoring Service will continue to be utilised in programmes such as "Monitor" heard at 1015 Thursdays and "Waveguide" at 0915 Mondays, repeated at 0430 Wednesdays.

I have been appointed to the job of VK7 Intruder Watch Co-ordinator after having been interested for several years now in the ever increasing amount of intruders and interlopers straying into our exclusive amateur allocations. Several of these intruders utilise the METEO code of groups of five numerals or letters, used universally for the exchange of meteorological data. As at present, I do not have a copy of the format, I would welcome any assistance in providing information relating to METEO. This will aid identification of region or transmitter sites of several intruders on 14 and 21 MHz particularly. Any information can be forwarded to the address at the head of this column.

Well, that is all for this month. Until next time, the best of 73 and good DXing!

— Robin

AR

QSP

IARU MEDAL

Mr N Kazansky UA3AF has been awarded the IARU medal for his services to IARU.

AR

AWARDS

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076

It never ceases to amaze me that there is still considerable interest in collecting various awards. Further, there never seems to be a shortage of awards that one can apply for. Most awards cost the applicant a few dollars each and on top of that there is the cost of obtaining the necessary QSL cards. The QSL cost can amount to a couple of dollars each if one has to QSL direct with return postage. Nevertheless, until a better system is devised the award collector will have to meet these costs.

This month we have details of awards from Honduras, Poland and the United Kingdom.

WORKED HONDURAS STATIONS AWARD

This award comes in two classes, the silver and gold awards. The silver award requires confirmed contacts with ten Honduras stations together with a confirmed contact with the club station HR1RCT. The gold award requires ten contacts plus HR1RCT on one band and a similar number on a totally different band. Contacts with the same station on different bands are allowed providing they are not made on the same day.

A complete list of the contacts is required which show: date, band, time, call and location of station contacted and report received. This list must be certified by the Federal Awards Manager and the cost is fifteen IRCs or five US dollars.

Applications should be sent to: Radio Club Tegucigalpa, Awards Committee, Apartado Postal 149-C, Tegucigalpa, DC, Honduras, Central America.

SP-DX AWARD

The SP-DX Club will award an attractive certificate attesting honorary membership to any licensed amateur or SWL having two-way communication with ten or more regular SPDXC members after 1st October, 1959. Prior to submitting an application confirming QSLs need to have been sent to stations worked. A certified list giving the usual QSO details should be sent together with ten IRCs to: SP-DX Club of PZK, Award Manager, SP9PT W Klosek, skr. poeztowa 131, 44-201 Rybnik, Poland.

Current SP-DXC Members are:

SP1 — ADM, ACA, AFU, BHX, BNS, NJ, UZ.
SP2 — AEO, AHD, AIB, AJO, AOB, AVE, BA, BRD, BE, BMX, BWO, DPA, DVH, EFU, FAP, FBC, FGO, HL, IU, IW, JS, PI, ZT.
SP3 — AGE, AIJ, AMZ, AOT, AUZ, BLG, BQD, CB, CDQ, CTC, DG, DGT, DOI, GEM, HDR, KX, PK, PL
SP4 — AS, AUQ, AWE, BGR, CLX, JF.
SP5 — ACN, AD, AEF, AEL, AIM, ARN, ATO, BAK, BB, BSV, BT, CK, CS, DVD, DZI, EWY, GOL, GX, IFU, JB, NE, QP, QU, SIP, WW, XM, YC, YL, YY.
SP6 — AAT, AEG, AEW, AKK, ALL, AOI, AQA, AXF, BAA, BFK, BZ, DMJ, DXB, DVD, EGC, FER, GB, SO.
SP7 — AGA, AOD, ASZ, ATA, AZ, BEB, BFC, BMF, CDH, CVW, DTP, ENU, GV, HT, HX.
SP8 — ABQ, AG, AJJ, AJK, AOV, AQN, ARK, ARU, ARY, ASP, AWL, AWP, BUH, CFZ, CUJ, ECV, EDQ, FNA, EV, FWB, HR, MJ, NR, SR, TQ, YA
SP9 — ABE, ABU, ADU, AHA, AI, AID, AJL, AJM, AJT, ANH, ANT, AOA, AOX, AQY, BDQ, BLF, BNY, BPF, BQF, CDA, CTW, CV, DH, DN, EEE, EFP, EU, FR, JA, KJ, KR, NH, PT, QS, RF, SF, UH, WY, UP, ZD.
SPODXC counts as five contacts

IOTA — THE "ISLANDS ON THE AIR" AWARDS PROGRAMME

The IOTA awards programme was devised in the early 1960s by Geoff Watts, founder of the DX News-Sheet. The programme is aimed at amateurs who, perhaps, have worked many of the "countries" of the world and are looking for a new challenge.

Basically, there are numerous awards for working island groups in each of the continents of the world. Further, there is an overall award for working the island groups of the world.

It is important that any amateur who is interested in this award obtained a copy of the IOTA directory, which lists all the acceptable island groups (see below).

IOTA awards are available to licensed amateurs and SWLs anywhere in the world, and are issued for confirmation of QSOs between licensed amateur stations operating within the authorised bands from land stations on islands from which permission for such operation has been granted. QSLs for contacts with ships or aircraft are not accepted. The name of the island or group (or some other identification) must appear on the QSL card. QSLs may be for any band and any mode, and space is available on the award for special band/mode endorsements. Photostat copies of QSLs are acceptable if both sides of the card are shown. In the case of "overprinted" cards, however, the card itself must be sent.

The basis for the island listings which appear in the IOTA Directory is the World Atlas of the National Geographic Society. Clearly there are far too many islands in the world for them all to be listed, though new ones are added to the Directory from time to time as and when radio operation takes place from them and provided they meet the criteria listed below. There are now almost 400 islands/groups listed in the Directory, and any new additions are notified in DX News Sheet which continues to be the principal organ for the publication of IOTA news.

IOTA Criteria:

Rule 1: With few exceptions "inland" islands located in rivers, lakes, harbours, etc, will not count for IOTA, and this also applies to smaller off-shore islands.

Rule 2: In the groups already listed, only those islands which form a recognised sub-group will be considered for "separate IOTA status", with the possible exception of an island remote or geographically separate from the main group.

Rule 3: Adjacent smaller islands count the same as the main island, except where these form a recognised group.

Rule 4: Islands not already covered by the IOTA listing will normally only be considered for inclusion in the Directory in the case of the following:

a) an island group or sub-group,
b) an island not in any group but with resident amateur population (but see Rule 3),
c) a DXpedition to a larger island not in any group (but see Rule 3),
d) a DXpedition to a remote island not in any group.
e) a DXpedition to an island remote or geographically separate from the main group.

Rule 5: Islands or groups must be shown and named in the World Atlas of the National Geographic Society, otherwise they will not be considered.

All IOTA correspondence to Geoff Watts, 62 Belmore Road, Norwich, NR7 OPU, England. Directories are available from Geoff for $2 US or six IRCs.

ADASTRAL AWARD

The Air Forces Amateur Radio Net, which comprises former and serving members of the various Air Forces of the world who are also amateur radio operators and/or SWLs, has instituted an Award, the "ADASTRAL AWARD", which is open to all members of the amateur radio fraternity.

The Net operates on a frequency of 3.610 MHz, approximately, each Tuesday evening at 1030 UTC - 0930 UTC when daylight saving is in force.

The Net also publishes its own quarterly newsletter.

The Award is available to licensed amateurs who submit evidence of two way contacts with AFARN member stations, identifiable by callsign and number, and to SWLs who submit evidence of having heard contacts between amateurs and member stations.

Contacts may be made on any band and any mode, but not whilst regular weekly nets are in progress.

Eligibility for the award is by working ten member stations. A member station may be worked once only.

Proof of contact to be by log extract showing date, time in UTC, callsign, membership number, frequency and mode. Log extract is to be certified by two other amateurs.

Contacts made as from 1st July 1983 are valid for this Award.

Applications to be sent to The Awards Manager, Ken Pyett, VK1NDK, 20 Rankin Street, Campbell, ACT 2601, together with a fee of $3.00.

This attractive Award is printed in black on a green background and measures 30 x 21 cms.

Well, once again that is the lot for this month, good hunting, 73 es DX de Mike, VK6HD.

AR

POLYCHLORINATED BIPHENYLS

QSP

Polychlorinated biphenyls are a range of substances consisting of a biphenyl molecule (or alkyl or aryl derivative) with more than one chlorine substituent. These compounds are very resistant to degradation and, if released, persist in the environment and accumulate in the food chain. They, and formulations containing them, have been available for some 50 years: Polychlorinated biphenyls are sometimes known as askarels, and some typical trade names include Apirolio, Aroclor, Asbestol, Bakola 131, Chlorextol, Clophen, Interteen, Kanechlor, No-Flamol, Pyralene, Pyranol, Pyrochlor, Saf-T-kuhl and Solvol. Because of their stability, non-flammability, high boiling points and dielectric characteristics, they have been used in transformers and large and small capacitors. However, very little new equipment is being filled with these substances — the sole UK manufacturer ceased to supply them for this type of application in 1972, and ceased production altogether in 1977. In Europe, an EEC directive of 1976 permits the use of polychlorinated biphenyls only in certain kinds of mining, heating and electrical equipment. This directive was implemented in the UK by SI 1980 No 638, the Control of Pollution (Supply and Use of Injurious Substances) Regulations.

Polychlorinated biphenyls are organic oil-soluble materials of moderate toxicity; and vapour is unlikely to be present in significant concentrations unless they are heated or used in a confined space. Exposure by skin or eye contact is the primary risk from these substances although vapour inhalation may be of significance where work takes place in an ill-ventilated space or where a large quantity of the substance has been released or spilled. This applies particularly if the spilled material is warm. The effects of exposure to polychlorinated biphenyls may include an acneiform rash known as chloracne, an increase in skin pigmentation which may be associated with an increased incidence of melanomas, a raised blood fat content and liver damage.

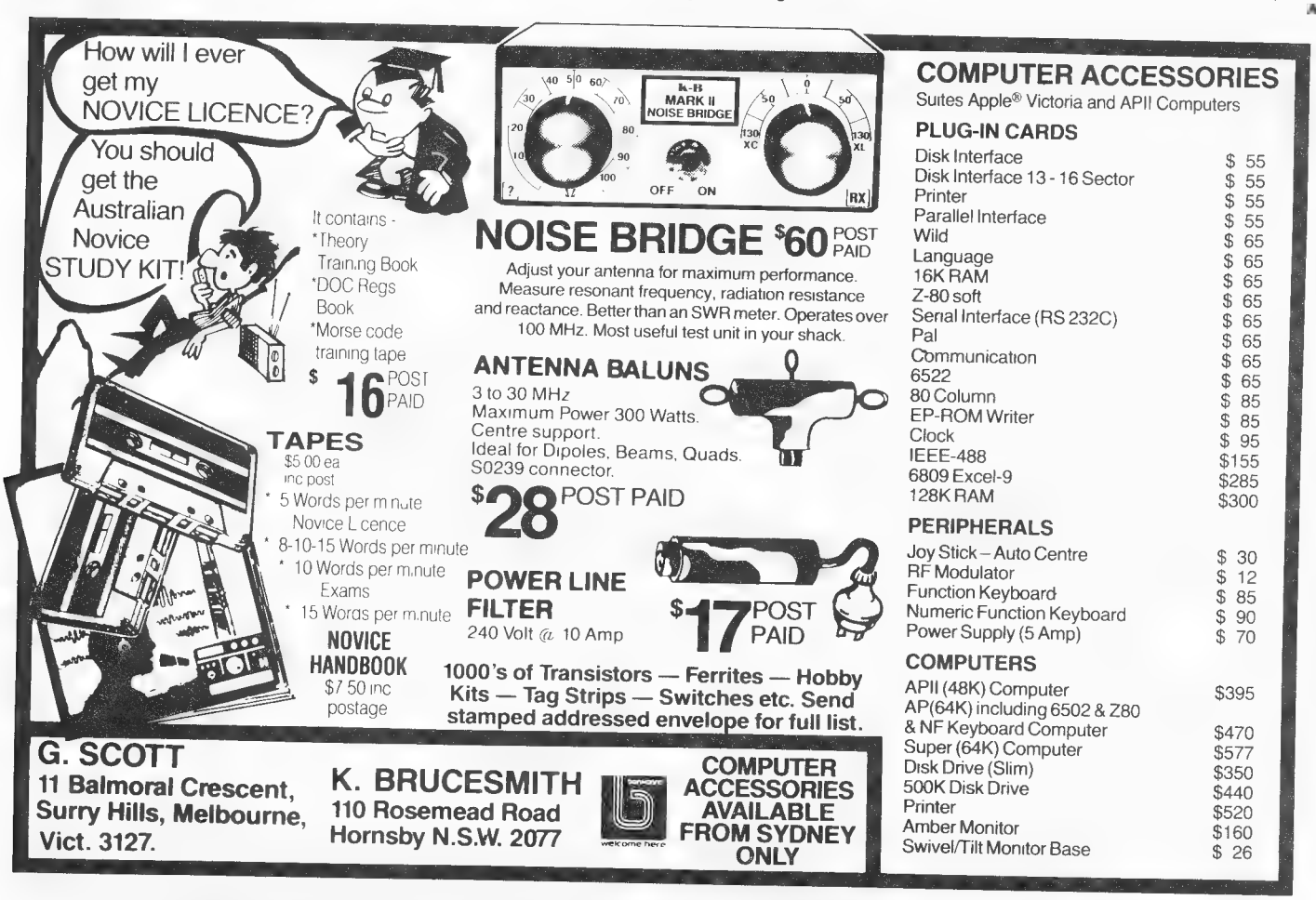
Where a choke or capacitor is found to be leaking, the wearing of gloves, together with strict cleanliness and the careful disposal of the item and wiping materials will usually be sufficient precaution. Local authorities should be able to offer advice and assistance with disposal. For work on larger equipment or for cleaning up spills, specialist assistance should be sought. A high standard of skin, eye and respiratory protection should be worn by persons likely to be exposed to polychlorinated biphenyls. Permeable clothing is not suitable: robust polythene or similar gloves and overshoes are advised, not rubber or neoprene. For work with only minor risks of contact hazard, terylene is acceptable.

Polychlorinated biphenyls should be treated with considerable care.

The chances of finding equipment containing these substances are difficult to assess. A high-voltage transformer on sale in a London shop recently was found to contain them, and it appears that many older fluorescent light fittings incorporate chokes and capacitors which utilise them. A faint smell akin to that of napthalene (mothballs) has been said to be associated with their presence, although deliberately sniffing the contents of a large transformer or dummy load would not appear to be advisable! The best recommendation would appear to be that, if it is suspected that a piece of equipment may contain polychlorinated biphenyls, the advice of the chief environmental health officer or director of environmental health services of the local authority should be sought: also the local fire brigade may be able to assist.

from Rad Com April 1984

AR

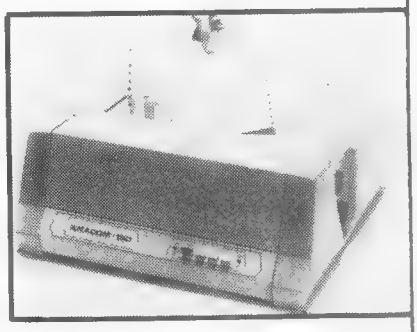


eti ELECTRONICS TODAY INTERNATIONAL

AUSTRALIA'S DYNAMIC ELECTRONICS MONTHLY!

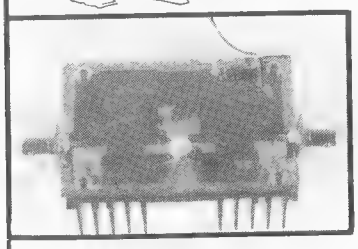
Up to date on today's technology.

In July 1984 we look into:



PRINTERS PRINTERS PRINTERS

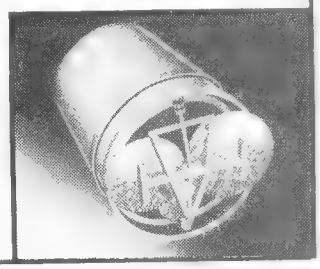
It's so easy to make a mistake when buying a printer for your personal computer. The choice of types and technologies is so broad it's one hell of a challenge just making a choice! The July ETI features a great, grand survey of the variety of printer types and explains the technology, the applications and how to choose the right type for your situation.



25 WATT UHF BOOSTER AMP

When you're running a mobile UHF rig you need all the power output you can get — repeaters notwithstanding. This low cost booster amp project will give your signal quite a 'lift' without breaking the bank. Easy to build, easy to get going, with readily available parts.

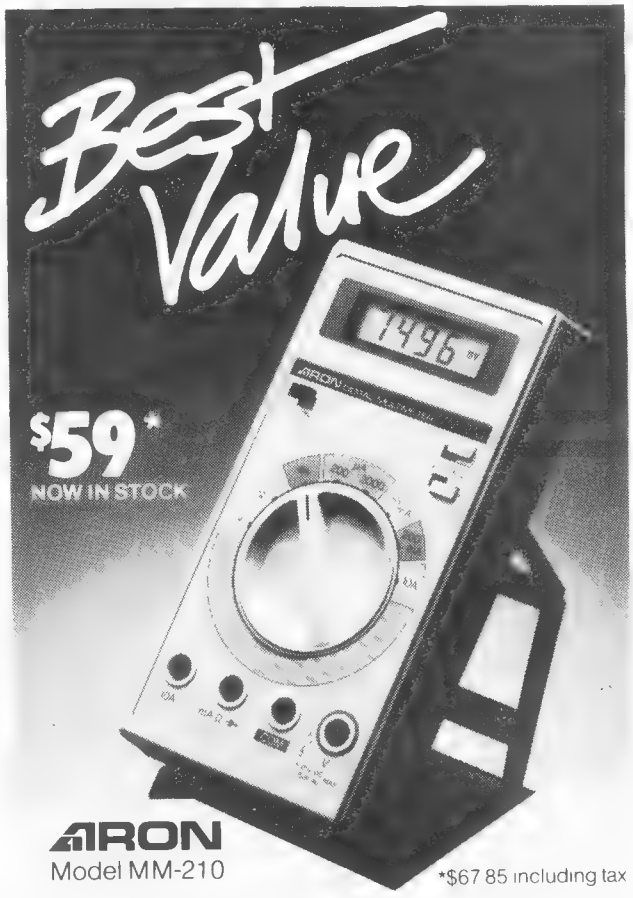
(Although these articles are in an advanced state of preparation, circumstances may affect the final content. However, we will make every attempt to include all features mentioned here.)



SATELLITE HF BROADCASTING

Last year the USA proposed the use of satellites as platforms for shortwave sound broadcasting transmitters. Such satellites could relieve the congestion and interference now experienced by ground-based international shortwave broadcasters. This article outlines the requirements and possible performance of satellite HF broadcasting.

eti $2.50 AT YOUR NEWSAGENT



Now you can afford a meter with all the features

There are plenty of low price multimeters around. Most are poor value because they lack essential features needed for fast measurement and ease of use. Although costing no more than the 'cheapies', all our meters have:

- ★ Auto **plus** manual range selection with high accuracy
- ★ 10A AC and DC current ranges
- ★ Powered by 2 economical penlight cells with a long 500hr life
- ★ High quality probes, alligator clip plus safety shrouds on meter
- ★ Audible continuity tester ★ Tilt Bail ★ 12 month warranty

MODEL MM-210 – SPECS

DC Volts: 5 ranges (200mV to 1000V) basic acc 0.75% res 0.1mV
AC Volts: 4 ranges (20000mV to 750V). basic acc 1%, res 1mV
Resistance: 6 ranges 200Ω to 20MΩ) basic acc 0.75% 200-200kΩ, res 0.1Ω
DC Current: 5 ranges (200μA to 10A). basic acc 1.0%, res 0.1μA
AC Current: 5 ranges (200μA to 10A) basic acc 1.5% 40-500Hz res 0.1μA
Other features: Diode test (reads actual junction voltage not resistance) continuity beep (<20Ω) low battery indication transient protection (6kV for <10μS)

MODEL MM-230

As for Model MM-210 except **Basic accuracy:** 0.25% **AC Voltage:** Resolution 0.1mV 5 ranges
The MM230 also incorporates a [illegible] position rotary switch for manual range selection. The MM-210 achieves [illegible] selection by use of the Auto/Manual button and annunciators on the display.
Also available: Model MM 220 Indentical to model MM 230 except basic accuracy [illegible]

314 Lower Plateau Road
Avalon NSW 2107
Phone (02) 918 8220
Telex AA 70842

neotronics

Please supply the following multimeter(s):

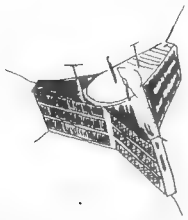
Qty

☐ Model MM-210 Multimeters @ $67.85 ($59.00 tax free)

☐ Model MM-230 Multimeters @ $113.85 ($99.00 tax free)

Name
Address
Postcode
Signature
card No.

I wish to pay by:
☐ Cheque/money order
☐ Bankcard
☐ Mastercard
Exp. Date / /84



AMSAT AUSTRALIA

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz
AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month are from Bob VK3ZBB, Graham VK5AGR and acknowledgement to the UoSAT Team for the UoSAT-1 Bulletin Board is given for the extracts used.

SOFTWARE DEVELOPMENTS

In recent months there has been a distinct drop in the price of the smaller sized computers, availabe in VK. Graham VK5AGR our erstwhile Co-ordinator has been investigating the market with the objective in mind in having as many amateurs as possible being able to receive the UoSAT Telemetry and Bulletin Boards and also use the Tom Clark Orbit Programme for deriving their own satellite predictions. Consequently he has selected the Tandy Model MC-10 and by the time this edition of Amateur Radio reaches the membership he should have operational the hardware and associated software for UoSAT Telemetry and Bulletin Reception finalised. At this juncture he does have a version of the Tom Clark Orbit Programme running on the MC-10, however it does require the 16 K memory addition. Nonetheless ways are being evaluated to get an operational version in the standard 3.1 K version. Any persons interested in this project are requested to write to Graham VK5AGR, QTHR enclosing a stamped self addressed envelope.

TOM CLARK W3IWI ORBIT PROGRAMME

Whilst on the subject of the Tom Clark Orbit Programme two additional formats are now available for use by those amateurs who possess an Apple or Tandy TRS80C Color Computer. The Apple Software can be obtained by sending a blank diskette with return postage to: *Peter Milne VK3BEJ, PO Box 30, Mildura 3500.*

The Coco software can be obtained by forwarding a tape and return postage, to Graham VK5AGR.

WELCOME BACK UoSAT-2

As reported last month, UoSAT-2 continued to remain silent and the amateur satellite fraternity were all starting to wonder whether we would ever hear it's beacons again. To record the chain of events that culminated in its rejuvenation I quote in full UoSAT Bulletin-75 issued on the 18th May 1984.

UoSAT-Oscar-11 Status

Over the weekend of 11th to 13th May, dedicated radio amateurs at Stanford Research International in California and their outpost in Greenland (headed by Bob Leonard KD6DG, at Stanford and Finn Steenstrup OX3FS, at Sondre Stromfjord) heard very weak signals emanating from Oscar-11's command receivers which, by their nature of operation, generate small signals on a frequency near to that which they normally listen. These signals told the University satellite team that their craft was still alive, although at this time the chances of complete recovery were not known. Although this observation, the first one confirmed since launch, did not lead directly to recovering the satellite, it did confirm that the orbital predictions provided by the NASA tracking organisations were correct and that the object being tracked by the Surrey team was indeed UoSAT-2. On the morning of 14th May at 10:24 UTC, Neville Bean G8NOB, and Roger Peel G8NEF, continued to command the satellite using its 144MHz uplink, to no effect. At 11:01 UTC (12:01 BST), Neville made further command attempts on 438MHz, and after a brief stream of initialisation commands, the main UoSAT-2 beacon (145.825MHz) was powered up at 11:05. The signals from the spacecraft were as strong as the last ones heard from it on the 1st March, when it stopped transmitting shortly after launch. Telemetry data, from the initial two orbital passes over Guildford, appeared to be very encouraging, with temperatures around −5 to 0 degrees Centigrade, as expected, and a battery voltage of 14.6 volts. The spacecraft was still spinning, but this had stabilised since the previous data received immediately after launch, ready for attitude control manoeuvres. These will not start until after the causes of the 11 weeks silence have been investigated, a process that itself may take many weeks in order to exercise the caution necessary in this situation. The UoSAT-2 spacecraft will be transmitting telemetry data continuously for the next few days while initial checks are made on the telecommand system, but after this other data formats will be generated using the spacecraft computer to check further the spacecraft's health. The most likely cause of the last 10 weeks silence is indicated by the very poor command uplinks. Indeed, only 8 commands were loaded into the spacecraft in the first 2 days after recovery, and none since. This accompanies a decrease in command decoder and battery temperatures, which had fallen from −5C to −11C by Thursday evening. There is evidence that this decline is ending, so a temperature cycle of some 10 days, with possible commanding for 3 or 4 is indicated.

Since temperature fluctuations are connected intimately with sun-angle, and hence attitude, the command problems could be purely due to the spacecraft antennas pointing away from the earth during some parts of the precession cycle. Careful experiments, performed when the spacecraft can be commanded, will allow us to further analyse the problem. Initially, the University of Surrey is encouraging radio amateurs and schools used to collecting data from UoSAT-1 to send them all the telemetry they receive from UoSAT-2, so that the pictue of its current state can be generated as soon as possible. The AMSAT series of amateur-radio oriented satellites benefit greatly from the thousands of receiving stations around the world who are able to send such data back to the controlling organisation.

UoSAT QUESTIONNAIRE

In order to plan for the future requirements of the amateur satellite service the University of Surrey has posted the following questionaire on the UoSAT Bulletin board. I urge all VK amateurs to spend a few moments to put pen to paper and respond to their request, as follows:

Name:
Address.
Radio Amateur Callsign?
Station details – what types of receivers and antennas on 145MHz, 435MHz, 2.4GHz and 21MHz?
Antenna tracking – fixed antennas, azimuth rotation only or azimuth and elevation?
Data demodulator – Purchased as built unit, kit or magazine article reference or brief description of active circuit elements if home-built?
Data processing or display – type of computer or VDU used – if any?
Data storage – audio data stored on magnetic tape or digital data on disc?
Orbital elements – Where do you get your orbital data from? Do you use circular EQX EQCT or Keplerian elements? Whose computer programme is used for processing the az/el figures for tracking? Do you have automatic data capture available to take data transmitted overnight?
Date formats: Which of the following do you use (and for what)?
Telemetry (unchecksummed)
Telemetry (checksummed)
Whole-orbit radiation data
Whole-orbit telemetry
Digitalker
Bulletin
CCD "images"
RTTY telemetry
Morse code
Please rate the above data formats in order of interest.
Other possibilities: We are considering the following and would be interested in your comments: Morse code bulletins (any speed possible!) on 21MHz or 145MHz. Generation of different data at night, transmitted using heavy checksumming for stations to receive automatically (maybe even with non-tracking antenna). Checksummed telemetry with Digitalker and bulletin at weekends. Automatic chaining between programmes to give greater availability of downlink over longitudes around 0° and 180°. Do you use any of the other amateur radio satellites? (eg Oscar-10, RS series, etc). Digital or audio communication? Do you receive data from the NOAA or Meteor series of weather satellites?

We thank you for your efforts in replying to this questionnaire – we always aim to please and need the feedback! Please send your contribution to the UoSAT team, University of Surrey, Guildford, Surrey GU2 5XH, England.

OSCAR 10 NEWS

Oscar 10 continues to provide untold rewards to those Australian amateurs who organise themselves to work through Oscar-10 in the early hours of the mornings. It is indeed unfortunate that the orbits accessible to VK at this time are centred around 1600UTC. It has been reportd that there are now 88 operational stations on Mode-L. Incidentally a reminder in respect to the switch on and off points for Mode-L. Switch On is at MA-106 and Switch Off at MA-150

The Value MA is sent on the Morse Code Bulletin as MA *** 256. MA is the Mean Anomaly referenced to 255 Hexidecimal. Similarly Mode B Switch On is at MA-40 and Switch Off is MA-216.

ORBITAL PREDICTIONS

To ensure that you all have the latest orbital data and elements listen to the Amsat Australia Net each Sunday evening, better still why not join in and share your experiences with others. See you on air next Sunday.

de Colin VK5HI

AR

Apogees etc on page 53.

BALLARAT AMATEUR RADIO GROUP

The Ballarat Amateur Radio Group proposes to hold a 'Hamvention' on 10th and 11th November 1984, as distinct from the usual Western Zone Convention.

It is anticipated that this will become an annual event and a major fund raising activity for the Club.

AR

MIDLAND ZONE — VIC

New Office Bearers for 1984 are:
Pres Don VK3XBL re-elected.
V/P George VK3AGM re-elected.
Sec Margaret VK3DML re-elected.
Treas Max VK3APB re-elected.
Ass Sec Treas Ron VK3YHV.
Publicity Off Peter VK3XDP
WICEN Co-ord Doug VK3DJY.
Imm Past Pres Bill VK3XO.
Repeater comm (2 m) Ross VK3YXR
Repeater comm (ATV) Barrie VK3BL

Our thanks to all for taking an active interest in the Zone and we look forward to another successful year.

The William Clark Memorial Trophy was awarded to Ross VK3YXR for his work with the ATV Repeater VK3RMZ.

Bendigo Premier Town Award continues to be very popular with over 220 certificates issued to date. Joan VK3NLO can be found on the Award net on Tuesdays 1000 UTC on 14.200 MHz +QRM and on Thursdays at 1000 UTC on 3.600 +QRM.

Due to the withdrawal of the $1.00 note the cost of the award will now be $2.00. *Please note.*

Next meeting will be on Friday 20 July at the Eaglehawk and Long Gully Community Centre at 8 PM. Topic will be Packet Radio.

Contributed by Margaret Loft VK3DML.

AR

SATELLITE INFORMATION
FOR PERIOD 28TH FEB-21ST MAR 1984

1. SATELLITES LAUNCHED

NUMBER	NAME	NATION	DATE OF LAUNCH	PERIOD MINS	INITIAL DATA APOGEE KM	PERIGEE KM	INCLN DEG	REMARKS
1984-020A	COSMOS 1539	USSR	28th Feb	89 6	367	179	67.1	SI TM
1984-021A	LANDSAT 5	USA	1st Mar	98.6	698	683	98 3	Telemetry on 2287 5 MHz
1984-021B	UoSAT 2	UK	1st Mar	98.5	696	678	98.3	Amateurs Satellite
1984-022A	COSMOS 1540	USSR	2nd Mar	1445	36 000	36 000	1.4	SI TM
1984-023A	INTELSAT F8	ESA	5th Mar					No data received
1984-024A	COSMOS 1541	USSR	6th Mar	710	39 424	584	62.9	SI TM
1984-025A	COSMOS 1542	USSR	7th Mar	90.3	373	236	70.4	SI TM
1984-012F	—		5th Feb					No information
1984-026A	COSMOS 1543	USSR	10th Mar	90 6	416	224	62.8	SI TM
1984-027A	COSMOS 1544	USSR	15th Mar	97.8	677	649	82.5	SI TM
1984-028A	EKRAN	USSR	16th Mar	1423	35 530		0.1	TV transmission
1984-029A	MOLNIYA 1	USSR	16th Mar	735	40 579	646	62 9	TV & Radio Programmes
1984-030A	COSMOS 1545	USSR	21st Mar	90.2	396	208	72.9	SI TM

SI — Scientific Instruments
TM — Telemetry

2. SATELLITES DECAYED
1982-038A COSMOS 1355 decayed on 7th Mar. Three other objects decayed during the period.

3. GENERAL INFORMATION
On 8th Mar 1966-100A ATS 1 was reported at 165 50° E with inclination of 11.286° Transmission is on 136.460 and 137.350 MHz

JULY 1984 — OSCAR-10 APOGEES

DATE	DAY #	ORBIT #	APOGEE UTC HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LONG DEG	BEAM HEADINGS SYDNEY AZ DEG	EL DEG	ADELAIDE AZ DEG	EL DEG	PERTH AZ DEG	EL DEG
JULY 1	183	790	1242 05	25	173	35	14	45	6		
2	184	792	1201:09	25	164	42	9	51	0		
3	185	794	1120.12	25	154	49	3				
4	186										
5	187										
6	188	801	2056:55	25	301					309	3
7	189	803	2015 59	25	292					315	9
8	190	805	1935 03	25	282			307	-2	322	14
9	191	807	1854.07	25	273			313	4	330	19
10	192	809	1813:11	25	264	310	3	320	10	349	22
11	193	811	1732:15	24	254	317	9	327	15	349	25
12	194	813	1651:19	24	245	325	14	336	18	359	26
13	195	815	1610:23	24	236	333	18	345	21	9	25
14	196	817	1529:25	24	226	342	21	355	23	19	23
15	197	819	1448:29	24	217	352	23	5	23	28	20
16	198	821	1407:33	24	207	2	24	15	21	37	15
17	199	823	1326:37	24	198	12	23	24	19	44	10
18	200	825	1245:41	24	189	21	21	33	15	50	4
19	201	827	1204:45	24	179	30	17	40	10	56	-2
20	202	829	1123 49	24	170	38	13	47	5		
21	203	831	1042:53	24	160	45	7	54	-1		
22	204	833	1001 56	24	151	52	1				
23	205										
24	206	838	2019:36	24	308					304	-1
25	207	840	1938:39	24	298					310	1
26	208	842	1857:43	24	289					317	11
27	209	844	1816:47	24	279			308	1	324	16
28	210	846	1735:50	24	270	306	-1	315	7	333	21
29	211	848	1654:54	24	261	312	5	322	12	342	24
30	212	850	1613:58	24	251	319	11	330	17	352	26
31	213	852	1533:01	24	242	327	16	339	20	3	26

HERE'S RTTY!

Dick Forrester VK3VU will, in future, be writing a RTTY column for AR.
All RTTY information should be sent to Dick at PO Box 600, Ballarat, Vic 3350, and we look forward and welcome Dick's columns in the near future

ALARA

Australian Ladies Amateur Radio Association

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

Ladies don't forget the Annual General Meeting on Monday 23 July at 1030 UTC on 3.580 MHz ∓QRM. This is your opportunity to voice your support for your association; if unable to be on air, register a proxy vote. All agenda details will be in the July Newsletter.

Next month ALARA will celebrate our ninth birthday on 27 August on our usual net 3.580 MHz at 1030 UTC. Please join us on both nights.

NEW MEMBERS

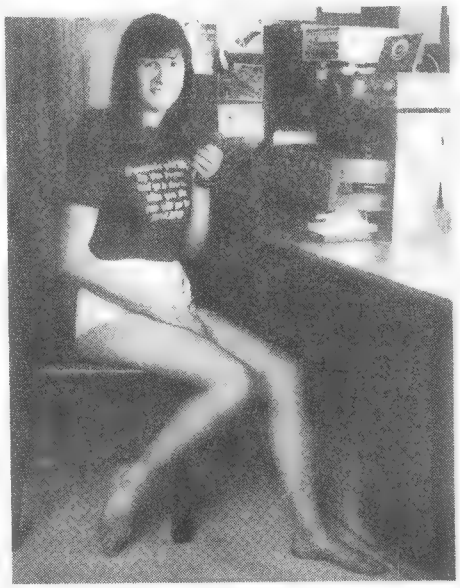
Welcome to new members Judy VK3PRC on 29.3.84, Joy VK7YL on 12.4.84 and Alice KD7SH on 26.4.84.

Congratulations to Valerie VK4FKL formerly VK4VKT on your success in the recent exams.

WEEKEND

Mildura Weekend is not far away and Marilyn has been very busy with plans for a busy time. A barbecue lunch is planned for Saturday followed by a casserole tea at Marilyn's QTH. Plenty of time to chat of course.

Sunday a conducted tour of points of interest with lunch on the paddle steamer Avoca will round off our first national get-together. We hope this will be the first of many such gatherings. Next year will be our tenth year and we must celebrate this very important event.



Judy VK3PRC.

The Mrs McKenzie CW Trophy will be on view at Mildura for all present to see, from there the trophy will be photographed for the certificate which will be presented to each year's winner. Due to the size of the trophy the committee felt a certificate would be easier to mail and the contest can be continued for many years instead of having to get each year's winner to return the trophy in time to send it on to the next winner. This way they keep their trophy. The certificate will be presented to the Top CW Score from an Australian YL Novice; so girls please get out your keys dust them off and start practising. Wouldn't it be an honour to receive the first Mrs McKenzie Memorial Certificate ever presented.

Full details of the contest rules will appear in the contest column of AR shortly when all details are finalised.

Contest date is Saturday, 10 November from 0001 UTC until 2359 UTC. Photo this month is of Judy VK3PRC one of our new members.

Until next month all the best from Margaret VK3DML.

AR

VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

Ross VK4AQK in a pensive mood at the Federal Convention. Guy VK4ZXZ is to the left.

FEDERAL CONVENTION

Guy Minter, VK4ZXZ, and Ross Mutzelburg, VK4AQK, came back from a hard weekend in Melbourne where they attended the convention, representing Queensland amateurs A very new aspect of amateur radio, "Packet Radio" was discussed and a FTAC sub-committee is to be established This committee will establish standards, procedures and operating practises. Should you have any opinions or input of interest, we ask you to channel your thoughts through your Divisional Council or to David Brownsee, VK4AFA, of the South East Queensland Teletype Group

Both Guy and Ross stressed the fact that the Radio Club Conference held in mid-April was of significant benefit to the VK4 cause at the convention. The VK5 Division has now held its first club conference and were also able to bring the views of their rank and file to the federal sphere. It is not surprising that both VK4 and VK5 were in agreement over many motions and proposals VK5 Councillors reported a decided change in their outlook after consulting with their club delegates

It is indeed pleasing to see that the Amateur Advisory Committees are not to be disbanded forthwith Queensland has been charged with the responsibility, in consultation with DOC, to establish guidelines for AACs throughout the Commonwealth Here, in VK4, we are convinced that the AAC must exist in each state. In the light of some practises, reported in other states, regarding repeater abuse and deliberate jamming, the AAC is absolutely essential. The new Radio Communications Bill will sharpen the teeth of DOC and we must have an AAC as a buffer

BARCFEST '84

Amateurs from far and wide came together at Indooroopilly State High School on 12 May for the second Barcfest organised by the Brisbane Amateur Radio Club. Some 300 or so people attended this day-long event, not only from the Brisbane area but from country areas and interstate In the attendance register were callsigns from VK2, 3, 5 and 6

Again it was geared for the whole family, other than amateur radio displays and exhibits were there One particular stand that attracted a lot of interest was a display of vintage radios by a non-amateur group At the other end of the scale was computerised weather-FAX producing satellite pictures of our weather conditions

After another success, the Brisbane Amateur Radio Club are already planning for another in May, 1985 Congratulations to all those who participated in Barcfest '84.

QUEENSLAND RTTY BROADCASTS

Those of you who live a long way from Brisbane, beyond the range of the Mt Cotton 2 metre repeater, may like to know that the South East Queensland Teletype Group also transmit their news bulletin on 7.035 MHz each Monday evening at 8 PM EAST (1000 UTC)

TOWNSVILLE 10 METRE BEACON

This beacon is now operational and shares 28 270 MHz with two other beacons, Albany, WA, and a South African

Guy VK4ZXZ explains some finer points to VK4 Delegate Michael VK4VXZ at the Convention.

The Townsville Amateur Radio Club are anxious to receive reports of its reception Their address is PO Box 964, GPO Townsville, Qld 4810. The completion of this project prompted this editorial in "Backscatter", the official bulletin of the Club

"It is good to see that creativity is not dead; and that projects such as our beacon work Almost certainly, the constructors were rather dubious in the first place of their ability to design and build a beacon. They learnt much in the process though, and all enjoyed the discussions and working bees that accomplished its completion I believe that such programmes are essential for our Club. It encourages members to keep abreast of the latest theory, and, in discussions they learnt much from one another Well one programme is over Why not start another — and get more of us involved It can only do good for the Club.'

EDITORIAL, BACKSCATTER
73, Bud VK4QY
AR

FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Henry VK8HA an observer at the Convention with Jenny VK5ANW and David VK5AMK. The RD Trophy is in front of Jenny.

The Annual General Meeting of the VK5 Division took place on the 1st May, and was quite well attended despite the change of date due to the Easter/Anzac holiday break. As we only received the minimum number of nominations to Council, the Council members remain the same with the addition of Don McDonald VK5ADD, who has been co-opted. We hope that you will enjoy your time on Council, Don The following are the Office Bearers for 1984/85

President	*Dick Boxall*	*VK5ARZ*
(Vice President (Secretary (Treasurer	*Jenny Warrington*	*VK5ANW*
(Vice President (Alt Fed Councillor	*Graham Ratcliff*	*VK5AGR*
(Federal Councillor (DOC Liaison	*David Clegg*	*VK5AMK*
Membership Sec	*Ken Westerman*	*VK5AGW*
Education Officer	*Rowland Bruce*	*VK5OU*
(Building Maintenance (Publications Officer	*John Gardiner*	*VK5PJG*
(Minute Secretary	*Don McDonald*	*VK5ADD*
(Imm Past President (Journal Editor	*Bill Wardrop*	*VK5AWM*

David Clegg — VK5AMK has also volunteered to run the Equipment Supplies Committee

Speaking of Committees, Ian Hunt VK5QX has agreed to be the nominal head of a Contest Committee to do the job of the Federal Contest Manager, and is looking for volunteers to help him on the Committee. Please let Ian or a member of Council know, if you are interested

From 28th May to the 1st June inclusive, Les VK5KLH and Jack VK5FV will be manning an amateur radio display in the Commonwealth Bank in King William St We hope that plenty of volunteers and contacts were forthcoming, and that it was a worthwhile exercise

Keeping our promises to the Clubs, we have been keeping them up-to-date with information, including Minutes of the Clubs Convention and a report of the Federal Convention. (If your Club has not received them please let us know) Also Parnanga Campsite has been booked for the weekend of the 12th - 14th April 1985 We would like to see all Clubs this year particularly the country ones If you feel that there is a problem with finance, talk to us and we'll see what we can come up with!

DIARY DATES (and we are still looking for a programme organiser)

24th July — "OSCAR-10" speaker Colin Hurst VK5HI
31st July — "Buy and Sell".

AR

WA BULLETIN

Bruce Hedland Thomas, VK6OO
PRESIDENT

Bruce VK600 and Neil VK6NE at the Federal Convention.

COUNCIL REPORT FOR THE YEAR APRIL 1983 TO APRIL 1984

INTRODUCTION

The Division comprised 744 members on the 16th January compared with 778 at the same date the previous year. We expect to lose a large number of unfinancial members this year due to the widespread financial stringency and this will probably be the first time for several years that the Institute has not grown. As large a membership as possible is vital because the Institute is the sole negotiating body for amateurs and negotiations frequently involve playing the "numbers game". As we have been reminded before, in getting members, personal commitment is much more productive than recruiting campaigns. We hope that every member will uphold the ideals and actions of the Institute both on and off air and will try to bring into membership any amateur friends who are outside at present.

The balance sheet speaks for itself but last year's decision to absorb the increase in federal fees has had us walking a financial tightrope. We decided that this year we would have to pass on the increase in federal fees but we would not increase divisional fees. This will require very careful management. The suspense account put by for WARC 99 stands at $1340 approximately.

The QSL Bureau balance sheet was presented to council in December and it is pleasing to record that Jim, VK6RU has traded the bureau back into the black after two years in deficit due to ever-increasing postal charges

THE YEAR IN REVIEW

During the year there has been a lecture approximately bi-monthly. But is is becoming difficult to find lecturers.

We have marked the passing of a number of Silent Keys, the untimely death of Con, VK6CO being a shock to all who knew him.

The IC 730 transceiver which was purchased by the Institute to lend to the Heard Island DXpedition was raffled, with enough tickets being sold for us to just break even.

On 17th May, World ITU Day, the Institute operated on all bands under the callsign VK6ITU thanks to a roster of volunteers. 750 QSOs were made.

JOTA was celebrated in October with yet again increased participation by both cubs, scouts, brownies, guides and amateurs.

We now have a new Intruder Watch Co-ordinator, Bruce, VK6KVV who looks like being a worthy successor to Dave, VK6WT.

The WA Repeater Group, now an incorporated body, has been very active on behalf of all amateurs. The new Bussleton repeater is well on the way and they have provided invaluable assistance to our newsbroadcast relay including tests of 40 metre and 80 metre FM transmissions

The VHF Group has also been active on behalf of all amateurs — perhaps the most notable achievement being the commissioning of the co-sited, harmonically related beacons 144, 432 and 1296 MHz at Bussleton.

The Institute's ten metre beacon was finally commissioned in March, thanks to much input by Phil, VK6AD, Charlie, VK6ZCK and Scalar Industries

WICEN members have continued in their self-effacing, dedicated way to train themselves in emergency operating by means of exercises on behalf of voluntary organisations and collaborating with the State Emergency Service. They have provided some interesting displays using their Mobile Forward Communications Centre, notably at the Radio Rally.

One of our most regular correspondents, the Goldfields Amateur Radio Group, has become a member club.

A novice course was commenced this year with Chris, VK6AVX as voluntary co-ordinator and chief lecturer. The need for such a course was revealed by many telephone enquiries to the secretary

Undoubtedly the highlight of the year was Radio Rally in November. Held in the spacious grounds of the former Parkerville Children's Home and it was somewhere between a mobile rally and a hamfest. Estimates of attendance varied between 400 and 1500 but what is indisputable is that all who went enjoyed it for its variety and opportunities of seeing new equipment, learning about new techniques, buying and selling old junk and meeting old friends. It was organised by a three man and one woman sub-committee and on the day run by a relative handful of enthusiasts to whom we owe a great debt of gratitude. It was underwritten by the Institute to the extent of about $500

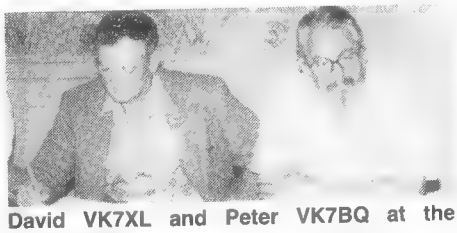
CONCLUSION

There has been relatively little business transacted or originated at general meetings. Council has raised items for discussion and held straw polls to obtain members' views on various matters. But otherwise meetings have been largely given over to informing the membership on what the council is doing. The fact that no outside nominations were received for council — the retiring council members simply re-nominating each other — presumably means that the membership is satisfied with the way things are being done. It may be a situation of total satisfaction or of total apathy or perhaps total apathy brought on by total satisfaction. But essentially the same councillors have been serving for a number of years now and both council and Institute, although carrying on in an efficient and matter-of-fact way, are noticeably less dynamic than when the present and elect councillors were first appointed. Whilst we should like to thank those officers of the Institute who have persevered in their duties each week of the year (and we think particularly of the news compilers and broadcasters and slow Morse operators) it has become noticeably more difficult to find volunteers to fill the various posts. The result of this is that the most pressing jobs are taken on by various councillors on an ad hoc basis. This results in their being overloaded and consequently jaded in their approach to amateur radio. This is something the Institute can ill afford at this time. A new dynamism is needed to rebuff the ever increasing threats to our hobby. The pressures will increase, from EMC problems with VCRs and TV, local authority problems over antenna planning permission, pressure on the spectrum from broadcasters, foreign CBers, overseas administrations, embassies and armed forces, to name only the most obvious. The council cannot do it all and an active sub-committee is vital

I should like to thank the councillors on behalf of the membership for their dedication and application to their many jobs and especially to the secretary Fred, VK6PF who, in many ways, *is* the Institute.

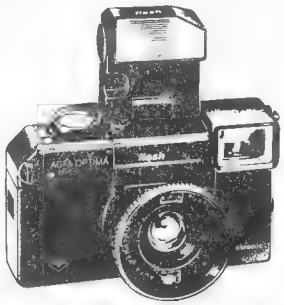
AR

TASMANIAN NEWS



David VK7XL and Peter VK7BQ at the Convention.

JUNE'S BEST PHOTOGRAPHS



This month the judges at Agfa-Gevaert selected the front cover, Quadricolor Industries selected Gil on Lord Howe Island, p 30 and the judges at Waverley Offset Printing Group selected the late Tony Burge p 44. These photographs will now be eligible for the prize of an Agfa camera to be announced in September.

FORWARD BIAS

VK1 DIVISION

73 and Good DXing,
John MacPhee
EDITOR AND EDUCATION OFFICER

VK1 representatives at the Federal Convention. L-R Fred VK1MM, George VK1GB and Allan VK1KAL.

This month I am pleased to be able to give you an ATV up-date

The ATV group meet at the QTH of Paul VK1BX and they reviewed the progress made on the ATV repeater construction. The current situation is:

- *The transmit and receive antennas have been erected on site and the hard line coax runs installed. This effort has been recorded on film and video tape for posterity.*
- *The active elements have still to be installed as is the 2 m receive antenna*
- *The first of the interdigital filters has been completed and tuned up in a most impressive manner. Now the design has been proven, the remaining filters can now be constructed*
- *The exciter is running and producing 65 mW of clean output. A preamp to raise this to ½ W for the next stage has been obtained and tested, only now requiring assembly*
- *The PA deck is running cleanly but some attention to mechanical rigidity is needed to guarantee stability*
- *The 2 m receiver has been tested and aligned OK.*
- *The audio selector has been completed and tested OK.*
- *The touch tone decoder/RTTY decoder and ID oscillator have been assembled and are partially tested*
- *The 426 MHz receiver and special effects generator are complete.*
- *An update on the status of the microprocessor based control module was not available at the meeting.*

Things now seem to be falling into place and the dedicated band of workers hope to have the complete unit on test by the time you read this article This may slip as so far it seems Murphy has been taking a holiday. If anyone is interested in getting into ATV then go along to their next meeting. The group has available for sale to the newcomer some equipment to help them get on the air quickly

For further information about the VK1ATV group, you should contact Kevin VK1OK on home phone 54 7129 AH

That's it for this month but before I close I want to say thanks Kevin for the ATV update Remember if you have anything of interest to share with other amateurs, please pass the information on to me and I will have it put into your column Your committee is your voice — so speak up so that all can hear!

AR

VK2 MINI BULLETIN

Tim Mills VK2ZTM
VK2 Mini Bulletin Editor
PO Box 1066, Parramatta, NSW 2150

The seventh position on Council has been filled by Les Pall VK2KCP who has the positions of Broadcast Officer and Membership Secretary. Robert Dolphin VK2EDR has been appointed Divisional Returning Officer, the position becoming vacant when Les joined Council.

Divisional broadcasts are conducted twice on Sundays, 11 AM and 7 30 PM. Members are urged to try and catch one of the programmes since this is the best way to hear current news, first hand. To bring these programmes to you requires a team of announcers and engineers, but we currently need more personnel to lighten the load. If you would like to assist, contact Les Pall, the Divisional office or Dural during the broadcasts

A word about QSLs This subject was raised at both the last Conference of Clubs and the Federal Convention In VK2 the Bureau is operated for the Division by members of Westlakes, from the Newcastle suburb of Teralba, PO Box 73, Teralba, 2284. Details on the Bureau operation are sent to all new members and anyone else wishing details may obtain these from either the Divisional office or the Bureau With an almost constant movement in callsign changes these days, it is difficult to keep the Bureau up to date, so may we remind you that it is in your interest to advise the Bureau of any changes, as they happen, even if you are not a QSLer. Some other points The AX prefix is much sort after by overseas stations If you are not a QSLer, make sure that the overseas station understands that, you don't QSL should you use the prefix during the various authorised periods For many awards a QSL card where VK is crossed out and AX written in its place is not valid since it is considered an altered card under most rules. If you do not have any AX cards, or for that matter any cards and you have none on the way, then why not obtain some of the range available from the Division. A preprinted card with space for the printing on your call. Check with the office during the hours, 11 AM to 2 PM Monday to Friday, or Wednesday evenings 7 to 9 PM. If you are planning a DX operation which may result in cards via the Bureau, advise them first of the details, so they know what to do with the flood when they arrive

17th May was international ITU day. The Divisional station at Dural was activated as AX2ITU with 215 contacts QSL cards are currently being written out for those who requested a card

RD CONTEST

Elsewhere in this issue will be details of the RD contest in August. A reminder that the normal Sunday morning broadcast is transferred to 5.30 PM on Saturday for this weekend Read up on the rules and operate as much as you can to help VK2 We need all the scores possible. It is hard for a large state to make it to number one. The only time VK2 has won was the first year the RD was held. Then it appears a rule change on the number of logs against the total licences came in and we have been behind ever since Half an hour on air by each licence will help VK2

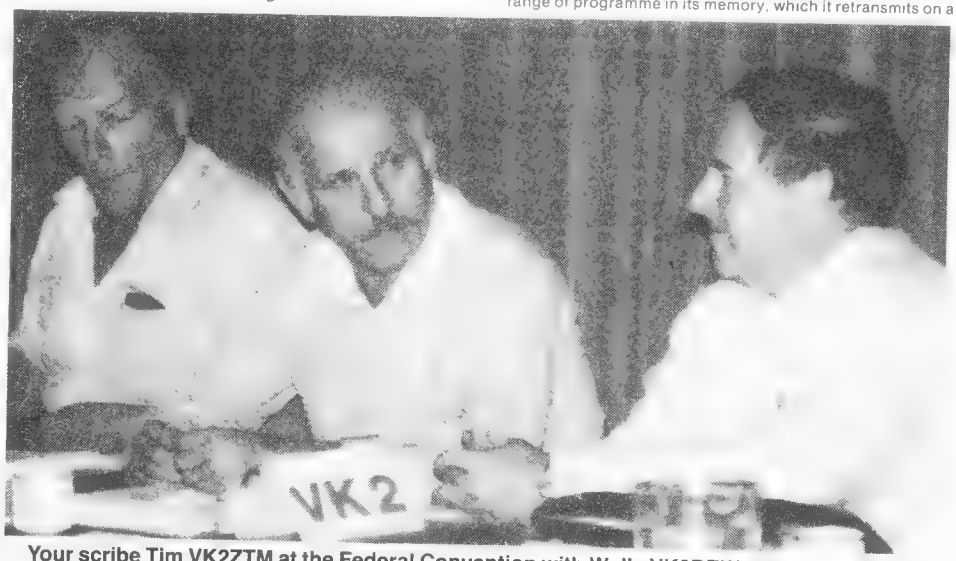
WICEN wish to remind you that the 5th August is the annual City to Surf event when over sixty operators will be required Even if you are not a member of WICEN you are invited to take part on the day. The broadcasts will have further details Another event requiring a large team is the Outward Bound Hawkesbury Canoe Classic during October

JOTA

It is not too early to start planning for this October event Contact your local group now if you are in a position to assist

AUTOMATIC MORSE MACHINE

Those in range of Sydney with 2 metres will be aware of VK2RCW on 147 400 MHz This service has been provided by the Hornsby and District ARC, for over five years. It is now planned to expand this service to an HF frequency to provide all within the state (and perhaps beyond at times) with access to the facility It will supplement but not replace the present excellent range of manned slow Morse sessions For those unaware of RCW, it is a microprocessor with an extensive range of programme in its memory, which it retransmits on a



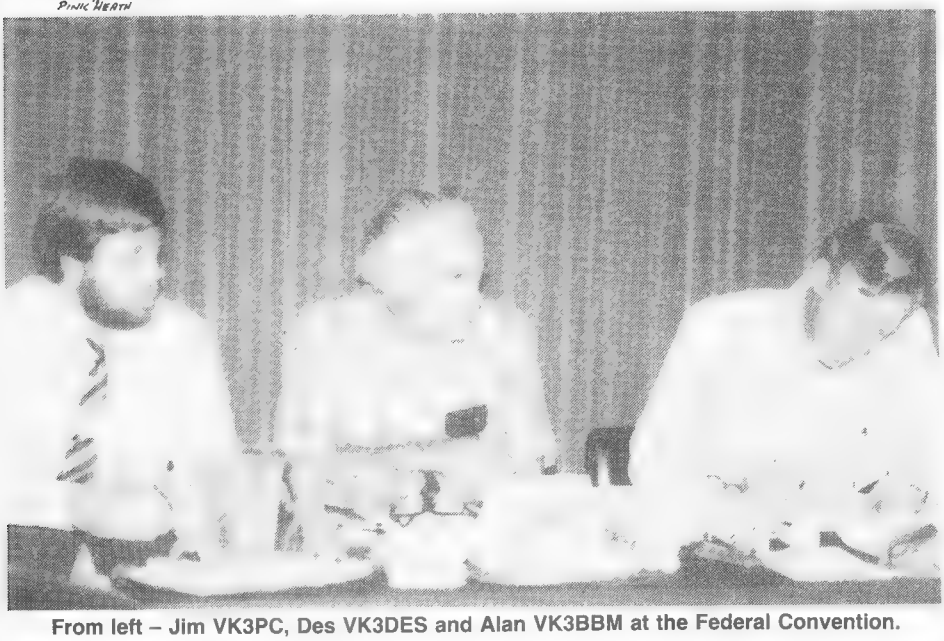
Your scribe Tim VK2ZTM at the Federal Convention with Wally VK2DEW (left) and Stephen VK2PS (centre).

continuous basis, at various speeds. This enables a listener to get a bit of practice in when circumstances permit. In order to extend the range, a low HF frequency has to be used to try and restrict coverage to our region. 160 or 80 metres being most suitable. 80 is the preferred band since the newcomer wishing to learn Morse will be more likely to have a receiver for this band The suggested frequency is outside the novice sub band towards the high end Since these are international bands by the nature of their coverage, we need to determine if there are any objections to a single frequency continuous transmission somewhere on 80. This means we have to check with our neighbours like ZL. There has been extensive investigation within the State during the past year on opinion. We would now like to ask interstate amateurs for their comment, for or against the project. Your comments should be sent to the Division at the address at the top of the column. If there are any other VK2s who wish to comment, please do so

1985 is the seventy fifth year of the WIA, the world's oldest amateur radio organisation. We need ideas on how to celebrate the event, can you contribute??? **AR**

VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VK3 DIVISION



From left – Jim VK3PC, Des VK3DES and Alan VK3BBM at the Federal Convention.

PRESIDENT'S 1983-84 ANNUAL REPORT (*EDITED VERSION*)

The President's report usually reflects on the past year and looks ahead to the future.

Looking for the highlight of 1983-84 I must admit all things were overshadowed by the birth of my daughter, Jennifer, on 24th November, 1983. Jenny has just cut her first tooth. Preparing this report has reminded me of the teething problems I have had as President during the past twelve months, but the experience has been well worth the pain.

Our hobby and the Institute have potential to do greater things if a more professional approach is taken to capitalise on opportunities as they arise

Next year is the Institute's seventy fifth anniversary and this Division has taken the lead in planning for it with an Award, and also an RTTY Art Competition.

I would like to see the Division plan now for the WIA's Centenary

If members supported the idea we could have a time-capsule to store contributions — imagine the interest this material would create in 2010.

That's for the future. But refelecting on the past year some of the major activities include the restructuring of WICEN, efforts to raise the public awareness of amateur radio, and the battle against tough radio mast regulations.

These three areas have received constant attention and will continue to do so during the coming year.

VICTORIAN DIVISION COUNCIL

During 1983/84, Council was below strength numerically and could have used people with the right sorts of skills and talents.

Despite this handicap Council has performed most of its duties due to the dedication of a few who wanted to serve the Institute.

After serving on Council for a considerable time Keith Scott, VK3SS, David Johnson, VK3YWZ, and Fred McConnell, VK3BOU have retired — they will be missed

Being short-handed Council has had to defer some things because more pressing matters needed priority.

One thing deferred was the examination of options open to the Division in regards to its major asset — the Divisional Headquarters.

More pressing matters like the Radio Masts Inquiry, Ash Wednesday and the Bushfire Review Committee, diverted members of the Options Committee.

The shortage of manpower not only directly affects Council, but there are unfilled ex-officio positions which have remained vacant for more than a year.

This is a problem highlighted in previous President's Annual Reports. I am not content to simply repeat this symptom of membership apathy — but I believe it's clearly time for members to solve the problem.

If members care about their hobby, and their national radio society, they must get directly involved in the Institute.

The 1983-84 Council has worked very closely with the six Zone Committees. This has included visits to all zones by Council representatives.

PUBLIC RELATIONS

Most of the achievements have been recorded in the Victorian Division Council minutes and/or in the pages of AR magazine.

They reflect the continued high profile the WIA is taking in Victoria and on occasions this has involved national publicity for the hobby and international publicity for the Institute.

Each zone has been encouraged to appoint a Publicity Officer — unfortunately not all zones have an active person carrying out this function.

VK3BWI BROADCAST

Improvements in the broadcast are being achieved with the long overdue upgrading of facilities at VK3BWI.

Broadcast Committee Chairman, David Johnson, VK3YWZ has taken up the challenge of solving the audio quality and RFI problems suffered in the studio, and Council has allocated sufficient funds. The broadcast has been under constant review. Its format, content, frequencies and modes used, the penetration throughout the Division, are all being examined.

CLASSES AND EDUCATION

The appointment of Fred Swainston, VK3DAC as Education Officer has seen this vital activity being well planned, and successful.

With an apparent downturn in growth of the Amateur Radio Service in the post-CB boom era, considerable effort has been necessary to put the WIA classes on a sound and viable basis. Following the DOC decision to have quarterly theory exams, their duration has shortened to six months but each theory class night was extended.

Fred Swainston with a number of helpers continued the theory revision weekends he pioneered — and to further expand the education activities he held a series of Saturday morning practical classes.

Roy Hartkoph, VK3AOH took the Novice theory class which ended last November, and upon his resignation as instructor, Phil Bercholdt, VK3AWD filled the vacancy.

Ron Cannon, VK3BRC continues to handle with dedication the Morse classes

SHORTWAVE LISTENERS

Recent statistics showed there were 261 Associates — or 12.44 percent of this division's membership — compared with the national average of nine percent.

Some of these will be future radio amateurs, but many are content to remain listeners.

The division could cater for SWLs in a more positive way, perhaps by encouraging the reformation of the SWL group to provide a forum for the interchange of ideas.

The shortwave listener is an important part of the radio hobby community and this President would like to see some of them come together in a committee to help promote SWLing and the Institute.

DISPOSALS

This has been an enormous success due to Fred McConnell, VK3BOU, the Disposals Officer and his band of helpers

Its success is not only to be measured in the financial result but also in the valuable service it provides to members.

A lot of hard work was needed to get disposals teleprinters into working order and credit for this goes to the RTTY Fixers Group.

WIRELESS INSTITUTE CENTRE VOLUNTEERS

Book and disposals equipment sales, class enrolments, member and non-member inquiries, signing up new members when they visit the rooms, encouragement to aspiring radio amateurs, and replying to postal requests. These are but some of the jobs done by the team of volunteers who man the rooms 10 AM to 3 PM weekdays.

Without their efforts it would be extremely difficult to maintain the level and range of services this Division proudly provides.

ADMINISTRATIVE SECRETARY

The year has seen a large increase in the volume of outward correspondence. This task along with filing, clerical and general office duties are done by the Administrative Secretary, Maxine Conheady, on Tuesdays and Thursdays

The functions of Council have been made much easier by the efficient and friendly manner in which Maxine performs her work.

OVERSEAS MEMBERSHIP

This Division continues to lead the way, it now has members in the USA, UK, South Africa, Japan, Oman, and Nauru

A sincere thank you to those members who have encouraged DX friends to join the world's oldest radio society

Some people have asked the question: *Why do we need overseas members?*

The obvious answer is the more members the WIA can get the better — but this is far from the full reason this Division has made a concerted effort on overseas recruitment.

The Wireless Institute has in many ways remained parochial. The Macquarie Dictionary defines parochial as "Confined to or interest only in one's own parish . . ."

Of course there's fine work done by the WIA through the IARU, and the joint WIA/NZART link, but I strongly believe it's time for a little (more) internationalism in the Institute.

The Victorian Division doesn't intend to just get overseas members and forget about them, it will encourage their participation in our radio society — articles to AR magazine are but one benefit. Closer relationships, greater international understanding, and even some visits to Australia by our overseas members will result.

AR

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

WHERE IS THE JOHN MOYLE HEADING . . .?

From the inception of the Wagga Amateur Radio Club, many years ago, members have always looked forward to, and planned for, their most popular contest . . . "The John Moyle". It's been more or less a tradition within our ranks to put everything we have into this annual event.

Planning normally starts two or three months before the event and up till recent years there has existed great enthusiasm both before, during and at the conclusion of the weekend of the contest. Like many other old established clubs throughout Australia, we could safely lay claim to not having missed a single JMMFD during the best part of fifteen years. We therefore feel pretty right in claiming to be a body who would collectively possess a sizeable amount of field day experience gained over these years.

The purpose of this letter is to seek the opinion of other Amateur Radio Clubs who, like ourselves, have put many years into participation in the John Moyle. We feel that we are becoming less and less enchanted with this contest as each year passes, and believe that many other clubs share our feelings.

We believe that a lot can be done by individuals and clubs to lift the John Moyle out of the doldrums, the first being to give the event worthwhile publicity during the months coming up to the event.

Our records each year sees a greatly reduced number of full field day stations participating. We lose a great many starters and replace them with a trickle of new enthusiasts who are feeling their way into a new area of contest. If it were not for the few "newies" giving the contest a go, we would pretty soon be out of field stations.

VK2WG/P, VHF/UHF set up on Mt Flackney during the 1984 JMFD.

Again there must be a reason why so many of the old, regular, multiple operator stations are dropping out. We believe the reason for this fall out is brought about by two main factors.

1. Field day groups dropping out have a contageous effect on those that do line up for the contest. The next year sees more drop out simply because the numbers were down the previous year . . . and so on. Somehow the numbers have to be kept up.
2. The operating rules, as they are, do not provide enough "points-gaining" encouragement for field day stations to go to a lot of trouble erecting anything but basic systems. This applies particularly on twenty metres where the same scoring points apply to working a station in Iceland as working a station twenty miles away if you happen to be operating near any of our state borders. More and more multiple operator stations are reportedly dropping out of working twenty metres with a portable yagi, and concentrating more on working forty metres on a helical or a dipole. Similar situations exist on VHF and UHF with very little encouragement given to multiple operator stations to erect multi-element stacked arrays only to find that they would have scored better by camping in a park close to a state border near a big centre and using a black box and whip from a parked car. We believe that the whole concept of equatible points scoring should be looked into, with the view of giving greater points return for effort put into the contest. This would increase field day enthusiasm.

Please don't get the Wagga Amateur Radio Club wrong . . . no matter what happens to the John Moyle, we will no doubt still be in there. It's still our main contest for the year. We would just like to feel a little more enthused when we look back at the event and do a balance of what points scoring benefit we received for our work.

Do any other radio clubs have any views on this subject . . . maybe it's us that are out of step and not keeping pace with what amateur radio should be in the 1980's.

SEE YOU AT THE NEXT JOHN MOYLE

Wagga Amateur Radio Club, VK2WG/P

John Knight VK2PQQ
PO Box 294,
Wagga Wagga, NSW 2650

AR

THE PICTURE SHOWS VK2AXH WAL IN THE ANTARCTIC 1912

VINTAGE QSL!

The above card may be of historical interest.

Although this card is not vintage in itself, it is a follow up to Mr Bathgate's reference to Wal Hannam, (Letters to the Editor) in May AR.

Picture on card shows Wal operating what appears to be a spark transmitter and I think it is on Macquarie Island. This card was picked up in a flea market.

Yours sincerely,

Alan Campbell-Drury,
10 Colchester Drive,
East Doncaster, Vic. 3109

AR

IS THIS A RECORD?

I have just received a QSL card as a result of a QSO I had thirty six years ago when with the pioneer Heard Island Expedition. The card came from VK2AHB, now VK2AV. Arthur remarks: *"A lot of water has passed under the bridge since 1948. I was inactive and my call lapsed for about thirty two years. I remember quite vividly the tiny signal from Heard Island. Sorry about the long delay in QSL time. Hi!"*

Arthur also returned my QSL card "as a memento of those days when five watts spanned a great big ocean." It was in its original envelope complete with 2½d stamp.

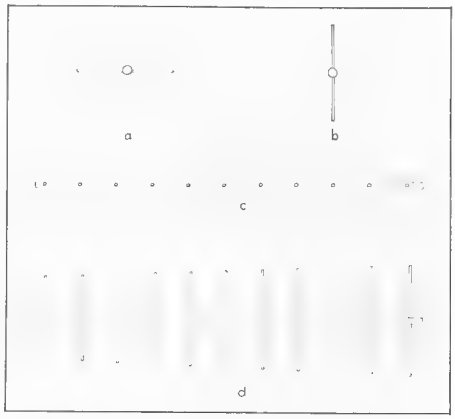
73

Alan Campbell-Drury,
10 Colchester Drive,
East Doncaster, Vic. 3109

AR

WINDY!

Correspondence received indicates that I erred in my assumption that the higher wind resistance offered by vertically polarized beams was a self evident fact. (AR, May 1984)



Consider the eleven element yagi in the diagram and assume that you are the source of the wind.

At position 'A' the yagi is horizontal and pointing at you. At position 'B' it is vertical and pointing at you. Obviously no difference in the areas offered to the wind.

Now, turn the beam side on to the wind. At 'C' it is horizontally polarized and at 'D' it is vertically polarized.

There is no prize for guessing which configuration is most likely to blow down.

73

Gordon McDonald, VK2ZAB,
59 Wideview Road,
Berowra Heights, NSW 2082

AR

IN ANSWER TO!!

I refer to the letter titled "FT 102 Owners Take Heed" which appeared in the May 1984 edition, and quote verbatim a comment by Yaesu Musen dated 9th April 1984:

"The absence of R84 on the IF Unit is an intentional situation in all of the production lots of the FT 102 after the first lot. This resistor was replaced with a 120 kilohm resistor, which you should find installed across the tracks on the solder side of the board. The reason for this change was to more accurately set the bias voltage to the signal gate of IF amplifier Q2010 (3SK73GR), to increase the dynamic range of this amplifier. The bias voltage should be 12 mV, measurable during transmission. During reception, the signal strength at this point should be 71 dB relative to a 0 dB signal applied to the antenna jack, at 14 MHz, SSB mode."

I trust this information will allay any fears that the FT 102 is anything other than an excellent transceiver which enjoys a high reputation among many amateurs.

Yours sincerely

S B Roberts, VK3BSR
Bail Electronic Services,
38 Faithful Street,
Wangaratta, Vic 3677

AR

REMINISCING

At the outbreak of World War II, the Radio Security Service (RSS) attached to the Army was formed. Amateurs in reserved occupations were invited to join after extensive screening.

The purpose of the RSS was to detect any enemy agents who may be parachuted into the British Isles. Although we were subsequently informed that this never happened, it was thought, at the time, that these agents would be proficient in many things

ncluding the English language, but not so in Morse, therefore we were instructed to copy any slow Morse signals heard in code.

At first we spent many hours each night copying reams of any slow five letter code, and sending the copy to the Army box number at Barnet. I used two receivers, the outputs being connected to each earpiece of the headset.

Eventually a pattern was discovered A new service was found to be in operation, with base stations in Berlin and Cairo, these were also operated by amateurs as indicated by their use of abbreviations such as CU agn OM 73 etc.

The callsigns and frequencies were changed frequently and this information was posted to us daily. At first the Morse speed was painfully slow — less than 12 WPM — but with time the speed increased. Some operators sent as high as 30 WPM but with many mistakes and constant repetitions, others kept to about 18 WPM, sent perfect Morse with no mistakes.

Any SOS calls had to be phoned into Barnet immediately. I only heard one such call "SOS down on Noney Island". We were told later that the North Sea was divided into areas and given code names, Noney Island was one of these.

Eventually I built a third receiver tuned to one of the base stations, the output was taken via a Creed Relay to a readout, which enabled me to use the other two receivers for searching for any new stations.

After some years the system became so tightly organised that the amateurs were disbanded and the Army set up listening stations throughout the UK. Although we used sharp audio filters, electrical interference was a problem, I used two 6 ft by 3 ft plates buried "edge on" into the ground with multiple earthing wires. At the end of the war we were officially thanked for our efforts, and told that only some codes had been broken down, but these were of great help to the allied forces.

Regards,

Eric Vass, VK5AEV ex G8AD
10 Shaftesbury Terrace,
Marino, SA 5049

This letter has been abridged. While still longer than normally published, the material warrants its printing.

Editor

PROJECT BLIZZARD

I refer to "How's DX" and a letter from Mr John W D Bathgate in "AR", 84.05 issue, mentioning Project Blizzard

In answer to the question, posed in "How's DX", I spoke to the expedition's leader a few months ago about possible amateur radio operations from Cape Denison.

It appears that at least four members of the team are trying to find the time to study for at least the Novice Licence examination So, there is a great chance to hear radio amateur operations from Cape Denison

Mr Bathgate may be interested to learn that the Redcliffe Radio Club has some very old and yellowed photographs of the 1911 Mawson radio shack at Cape Denison. The Club is presently in the process of having acceptable black-and-white prints made of these historic photos and will no doubt make copies available to "AR" for publication.

Finally I heartily endorse Mr Bathgate's suggestion that as many interested persons become "Associate Members" of Project Blizzard. Our radio club voted to become an Associate Member and we recommend that other radio clubs in Australia do likewise, thus assisting in the restoration of the building from where the first Antartica - Australia telegraphic link.

Sincerely yours,

John Aarsse, VK4QA
Hon Treas RRC
PO Box 20, Woody Point 4019

SWEARING

May I bring to readers attention a column, under the heading "SWEARING ANGERS RADIO OPERATORS", which appeared in the Courier-Mail Brisbane, 2nd April, 1984. The same item quite likely appeared in southern newspapers.

I quote part of the column. *"A group of Hams has formed a SECRET committee to track down those responsible for swearing on air . . . A WIA member who investigated . . . said they (the profaners) were a serious worry . . . to NSW Hams."*

Let me say I am glad to read that the offenders are tracked down and punished. However unless care is taken the means of detection could become the subject of question.

SECRECY is an expression or activity that should have no place in AR. Unfortunately administrative bodies may indulge in it from time to time but the word or deed is alien to all AR stands for. These comments are not directed specifically at those who formed the NSW SECRET committee They quite openly attended court during the offender's prosecution. However I would suggest the word SECRET be deleted from their committee and activities as quickly as possible.

The word SECRET has a connotation that gives some others, ideas. For conspiratorial minds prone to arbitrary value judgements, the step from a SECRET committee to a vigilante group is only a small one.

Self-regulation should be our aim but it has obvious limitations — and never enforced by SECRET of vigilante means. This would utterly tarnish our image and should be universally condemned by all.

Alan Shawsmith, VK4SS
35 Whynot Street,
West End, Qld 4101

AMATEUR RADIO ON YACHTS

In recent months a number of comments, including one from the WIA president, have been published on the ethics and desirability of encouraging the use of amateur radio by yachtsmen Yachting journals have published articles both supporting and opposing the installation of amateur gear on yachts As a licensed amateur (for twenty six years) and a member of the crew of an ocean-going yacht sailing out of Sydney, I have installed on it a transceiver modified for general-coverage transmit. I would like to explain the responsible reasoning behind this action.

The licensing of a marine radio station on a yacht requires the installation and inspection of a type-approved marine transceiver

The operation of an amateur station under ocean conditions on a yacht is a technical challenge entirely consistent with the spirit of amateur radio Amateur radio provides a unique and regular contact with friends and family Emergency messages are normally sent on the marine set via Sydney radio or a limited coast station, and can include direct telephone calls. Amateur radio is used for general messages which would not otherwise be sent

I have never taken part in or listened to a regular amateur marine traffic net, but I can imagine that amateur radio cruising yachtsmen would enjoy talking to other yachtsmen and those interested in sailing. In an emergency situation marine, not amateur, radio would always be our first choice.

The most reliable marine radio will fail sometimes in the adverse environment in which it must operate In this situation the amateur set acts as a back-up marine radio for emergency use. Given the choice between a normal amateur-bands-only set and a modified one, I have no doubt which I prefer to have on the yacht. Its operation on marine frequencies is quite proper in such a situation. It may not be unreasonable that such general-coverage transceivers should carry a higher tariff duty than conventional amateur equipment; that is a quite separate issue.

The Amateur Radio Group recently formed within the Cruising Yacht Club of Australia strongly opposes unlicensed operation of amateur radio equipment by anyone including yachtsmen The Group is presently seeking affiliation as a club with the NSW branch of the WIA. As a member of this group in addition to my home club (Hornsby and Districts ARC), I have given technical courses for both NAOCP and AOCP at the CYC to assist yachtsmen and others who wish to become properly qualified amateurs. I would never advise any yachtsman to instal amateur gear in place of a marine transceiver, or without holding an amateur licence.

I strongly resent much of the comment made by the WIA president in his Christmas message of goodwill to all amateurs (including many who are yachtsmen) in the December issue of AR. No doubt there is abuse of the regulations by some mariners, but the solution is not to prevent the sale of general-coverage transceivers to those who are qualified and have a legitimate use for them, nor to close down maritime nets of amateurs. The regulations already provide for dealing with licensees, including net controllers, who may persist in communicating with unlicensed stations.

Yours faithfully,

Guy Fletcher, VK2BBF
3/34 Benelong Road,
Cremorne, NSW 2090

This letter has been considerably abbreviated. Ed

Australian War Memorial

Canberra ACT 2601

HELP REQUIRED

In recent years the Australian War Memorial has commissioned a number of long-term aircraft restoration projects which are designed to help raise the general display standard of the Memorial's aircraft collection

All will appreciate that projects like these are very costly and as is often the case, it is very difficult to obtain original military fittings.

Amateur radio operators purchased much of the RAAF's surplus radio and radar equipment after the second world war and I am hoping therefore that members might be able to help us locate the following equipment

AIRCRAFT	INSTALLATION
Sea Fury	ARI 5491 (VHF) ARI.5307 (Z BX)
Wirraway	TR 9 R 1082 T.1083
Spitfire	TR.1133 or TR.9D TR 1143 R 3002
Mosquito	R.1154 R.1155 TR 5043 (VHF) SCR 695 (BC966A) LORAN AN/APN9
Lancaster	ARI 5033 R.3090 ARI 5000 R.1124 R.1125 TR 1196
ZERO	Type 96 Ku Mark I command set. Type 1 Ku Mark 3 Radio homing and DF Loop or alternatively, the American built Fairchild equivalent
B-25	BC-459A BC-458A BC-442A (Antenna Relay) BC-454A BC-453A BC-455A BC-966 (SCR 695)

Command Set (SCR-274-N)
BC-453B
Liaison Set (SCR-287-N)
Radio Set (SCR-522)
Radio Sets RC 103 and
AN/ARN-5 installation
Marker Beacons RC-43 and
RC-193 Radio Compass
(SCR 269) and AN/ARN-7

In addition we also require the many items of associated equipment such as amplifiers, control units, aerials, antennas and shockmounts

I would be very interested to hear from any members who feel that they might be in a position to help us out.

Yours sincerely,
Mark Clayton
Acting Curator, Military Technology
for Director
Australian War Memorial,
Canberra, ACT 2601
AR

FURTHER TO . . .

Re amended Gentleman's Agreement of CW, NARROW BAND AND WIDE BAND. I have, through the courtesy of Federal Councillors Guy Minter VK4ZXZ and Fred Robertson-Mudie VK1MM, been given a copy of the Band Plans decided upon at the 1984 Federal Convention

Let me say at the outset that I am in general or broad agreement with the decisions taken and am gratified at the outcome. However, I am also aware that they may not be acceptable to everyone Firstly, it must be clearly understood that those newer modes which fall under the heading of NB and WB are entitled to their own segments (homelands if you like), in each of the bands, just as CW and SSB have their own defined areas. It has been necessary for the traditional modes to relinquish a little of their previously allotted spaces, so that these new modes may be accepted

Philosophically, I am in tune with the WIA's original idea of not wishing to impose any further unnecessary restrictions on the various modes — but, because I am active daily on the CW segments of the bands, it was patently clear that unless some Band Plan was formulated the long term result would be much confusion, friction and disruption to both CW and RTTY. I am sure the new decisions will be published in detail in AR and though there may be some points of contention, I feel that in relation to the whole scheme they will be minor.

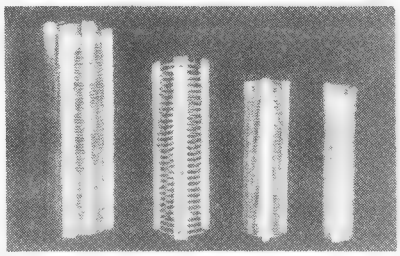
By and large, the CW fraternity has retained its CW ONLY sections of the bands which are most commonly used. My suggestion is that the amateur spirit prevail and the Band Plan Gentleman's Agreement be given a fair trial, at least. Any problems that may arise along the way can be taken up with the Federal Executive, in due course.

73
Alan Shawsmith, VK4SS
35 Whynot Street
West End, Brisbane
Qld 4101
AR

NOTE

Letters to the Editor should be concise and to the point, preferably typed double spaced but legible hand-written copy is acceptable — but please write on every second line. Also please leave a 2 cm margin on the left-hand side.

AIR-WOUND INDUCTANCES



No	Diam	Turns per Inch	Length	B & W Equiv	Price
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1-16	½"	16	3"	No 3003	$1.60
2-08	⅝"	8	3"	No 3006	$1.90
2-16	⅝"	16	3"	No 3007	$1.90
3-08	¾"	8	3"	No 3010	$2.30
3-16	¾"	16	3"	No 3011	$2.30
4-08	1"	8	3"	No 3014	$2.60
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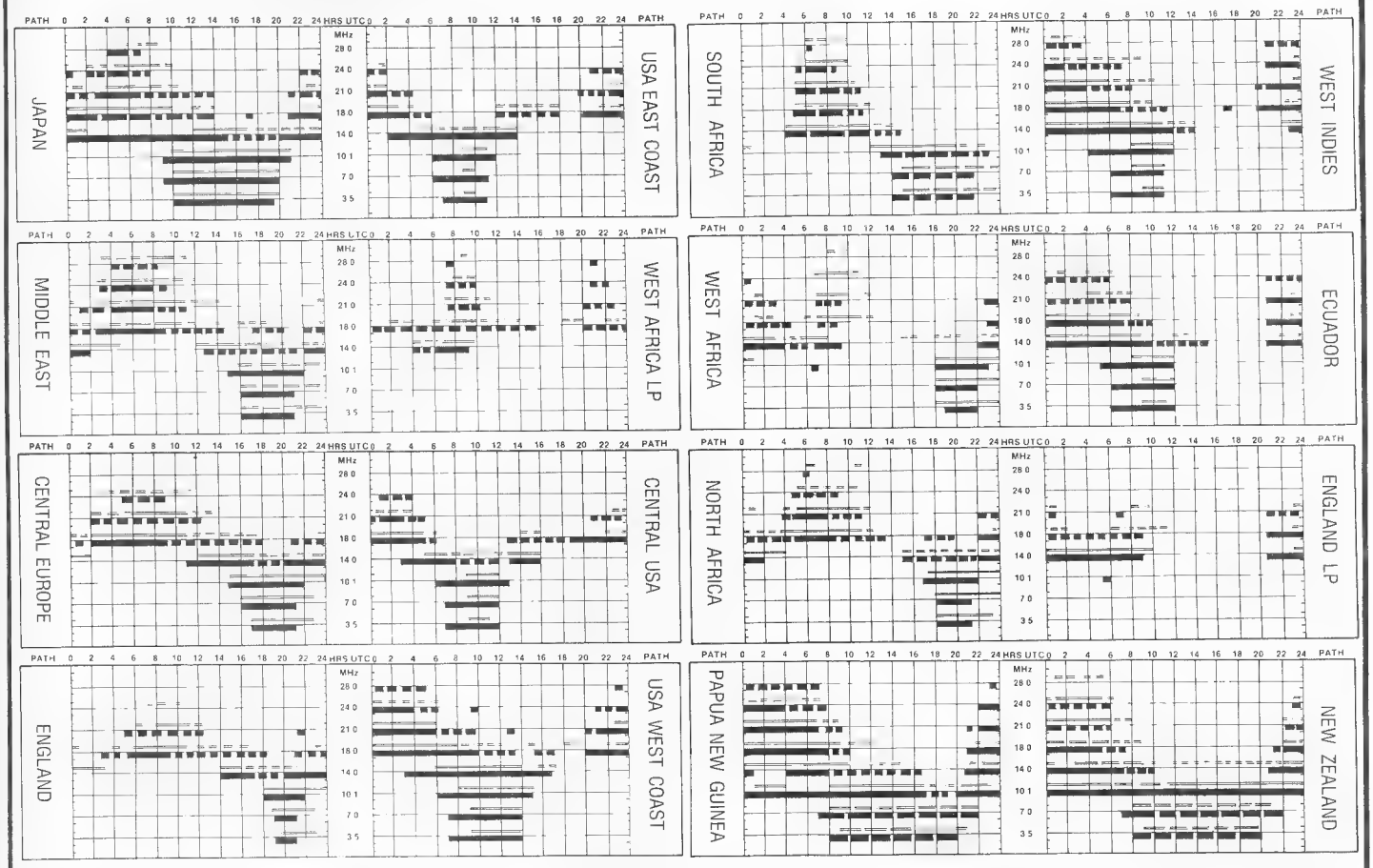
IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

From Western Australia (Perth)

From East Australia (Canberra)

Better than 50% of the month but not every day (continuous lines)

Less than 50% of the month (short broken lines) Mixed Mode Dependent on angle of radiation (long broken lines)

Paths Unless otherwise indicated, the LP = long path and paths are short path

Predictions reproduced courtesy of the Department of Science and Environment – PS Sydney All times in Universal Time Co-ordinated

GEOMAGNETIC AND SUNSPOT ACTIVITY

PREDICTED MONTHLY SMOOTHED NUMBERS

	CLASSICAL METHOD	SIDC ADJUSTED VALUES
4/84	55	44
5/84	53	42
6/84	51	39
7/84	50	38
8/84	48	37
9/84	47	37

Precision on the sixth predicted value ± 8.

Classic estimated smoothed value for Dec 1984 = 42 ± 10. Forecast values are evaluated on the basis of the latest smoothed value — Sep 83 – 67.9 ± 5%.

Sunspot data courtesy: Sunspot Index Data Center, Bruxelles, Belgium.

Ap INDICES

MONTHLY	MEAN	HIGHEST DAILY		LOWEST DAILY		DAYS OVER Ap 15
8/83	16	62	8/8	2	18/8	15
9/83	14	54	19/9	3	30/9	11
10/83	17	51	18/10	2	27/10	16
11/83	15	33	30/11	3	9/11	13
12/83	13	31	30/12	2	9/12	11
1/84	13	30	4/1	3	8/1	11
2/84	17	54	4/2	7	13/2	13
3/84	21	60	28/3	4	5/3	20

Ap Data: IUGG: Association of Geomagnetism and Aeronomy, Gottingen, Germany FR.

PROVISIONAL MONTHLY MEAN SUNSPOT NUMBERS

Monthly	Mean	Highest	Daily	Lowest	Daily
8/83	71.9	131	1/8	40	20/8
9/83	50.9	81	5/9	32	20/9
10/83	55.2	130	11/10	11	28/10
11/83	33.2	90	8/11	0	22-26/11
12/83	33.4	82	10/12	10	28,31/12
1/84	57.6	118	29/1	10	1/1
2/84	84.5	121	23/2	50	18/2
3/84	83.6	117	16/3	42	10/3

RUNNING SMOOTHED SUNSPOT NUMBER

FINAL SMOOTHED NUMBERS

1/82	137.1
2/82	133.4
3/82	129.3
4/82	124.4
5/82	120.0
6/82	117.4

PROVISIONAL SMOOTHED SUNSPOT NUMBERS

7/82	115.3
8/82	109.5
9/82	101.1
10/82	95.7
11/82	94.7
12/82	94.6
1/83	92.8
2/83	90.3
3/83	86.0
4/83	81.4
5/83	77.1
6/83	70.5
7/83	66.5
8/83	65.7
9/83	67.9 ± 5%

2800 MHz SOLAR FLUX

MONTH	MEAN	HIGHEST DAILY		LOWEST DAILY	
5/83	137.6	165	11/5	115	7/5
6/83	139.2	174	7/6	123	14,30/6
7/83	125.6	153	31/7	114	18/7
8/83	124.7	155	12/8	101	28/8
9/83	109.3	119	6/9	100	19,20/9
10/83	112.5	139	11/10	88	22/10
11/83	93.1	111	7/11	80	23/11
12/83	93.9	112	9/12	84	28,29/12
1/84	114.3	180	29/1	87	1/1
2/84	140.8	174	25/2	115	6/2
3/84	121.4	146	1/3	100	10,11/3

Solar Flux Data: Ionospheric Prediction Service, Sydney.

Last data published AR Nov 1983 p 71.

AR

See 1984-85 Call Book (out shortly) for further information on understanding Ionospherics.

Obituaries

GEORGE FRANCIS BARHAM VK8NE

George was born in Ipswich, Suffolk, England on the 23rd March 1923. He came to Australia with a Church of England boys immigration scheme when he was sixteen years of age and later went to work on a farm at Forbes NSW. During the war he served with the AIF and at the end of hostilities served with the occupation force in Japan.

George first obtained his amateur call in NSW in 1955 and was quite active until 1967. During this period he moved to Darwin NT, where in 1978 he again became active in amateur radio. Throughout his life, both as an amateur and as a man in the street, George was held in the highest regard by all who had the pleasure to make his acquaintance.

The 30th October 1983 was a sad day for his family and his many friends particularly for those on the "See Australia First" net where he so often rendered assistance, comfort and companionship to so many of his fellow amateurs during their travels around this great country of Australia.

To his beloved wife Nancy, his children and grandchildren we offer our condolances. We too will ever mourn his sudden passing.

God bless you and ever keep you in his tender care George.

Tom Delandre

AR

The late George Barham and his XYL Nancy.

Photograph courtesy Tom Delandre

HAROLD HOBLER VK4DO

The many friends, and fellow amateurs, will mourn the death of Harold Hobler, VK4DO, of Rockhampton Queensland. Hal, as he was known all over the world, passed away early on Sunday morning, 6th May, 1984.

Hal was an active amateur, for well over fifty years. In fact, he attended the local Amateur Radio Club, the Friday night before his death.

His many exploits, contest operating, numerous certificates and trophies, as well as his unfailing good humour, were well known to the thousands of amateurs all around the world, who had the pleasure of working him.

He was one of the original amateurs, who founded the Central Queensland Branch of the Wireless Institute.

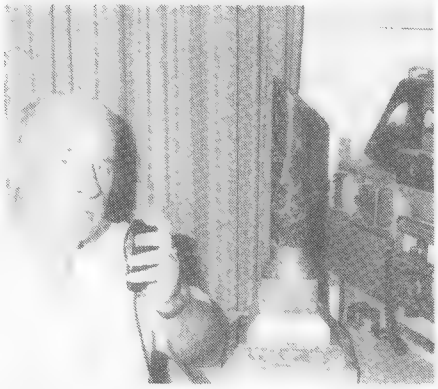
I met him, very early in my radio career, and he was of tremendous help to me, whilst I was studying for my ticket. Hal was a very close and dear friend to me, as he was to many other people.

Even a brief outline of his life and activity in both amateur radio and public life, would take up quite a lot of space. But, his life has been very well documented in Amateur Radio magazine, most recently on page 8, March AR, and many overseas radio magazines.

Our deepeest sympathies go to Molly, his wife, and to his family.

Claud Singleton, VK4UX

AR



Photographer – CQ Branch

The late Harold Hobler pictured with the Ross Hull Trophy which he won in 1977 and 1979.

Photograph courtesy Rockhampton Morning Bulletin

Life Member of the institute Harold VK4DO passed away 3.00 AM Sunday, 6th May, 1984 at Rockhampton. His life as an amateur for sixty three years is known by many. However, I would like to describe Hal as I knew him for only a few short years.

I joined the WIA in 1978 at Rockhampton and met Hal as a past President and then Treasurer.

Into his 70s, his mind was still alert. We had no trouble communicating with him as there was no generation gap. He enjoyed our company and we had many long QSOs with him. It was stated at his funeral that he was a great communicator. As many know this was true.

On the rear window of his car a sign said "The world listens to VK4DO". How true this is as he was one of the most active operators in Central Queensland. He really enjoyed his QSOs as well as being a major 6 metre operator and very active on the HF, DX bands. He had a good sense of humour and enjoyed a friendly "stir".

His CW was only a blurr to me. He could talk to me while listening to his regular CW sked from the USA which seemed about 30 WPM. CW was just another language to him.

He was all that, a true amateur should be and was still homebrewing gear until recently.

We all enjoyed his tales of days long gone. His claim that his life span covered the most progressive period in history from horse travel to space travel — from smoke signals to microprocessor communications.

We all knew his bad heart would give up eventually but the loss of this marvellous old gent will be difficult to accept.

Clive, VK4ACC
President CQ Branch, WIA
Rockhampton

AR

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All copy for inclusion in September 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than midday 25th July.

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*** Please insert STD code with phone numbers when you advertise.**

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTHR means address is correct as set out in the WIA current Call Book.

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WANTED — NSW

FTV250 YAESU TRANSVERTER to suit FT101E. Ph: (066) 52 7160 or write PO Box 433, Coffs Harbour, 2450.

LOW POWER TRANSMITTER &/or receiver for Morse only. Working or not. Home brew OK. Wal VK2EFZ. Ph: 797 7514 Evenings.

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ANTENNA TUNER UNIT, FC-107 for Yaesu FT-107 Tcvr. Price & details to Neil May VK3VZY, QTHR. Ph: (03) 478 7660.

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AZDEN PCS-4000, computerised 2m FM tcvr, still under warranty. Has 8MHz coverage, full scanning, 16 mems. Comes in orig carton with scan mic, all accessories & instr manual. $400 ONO. VK5NHB QTHR. Ph: (08) 250 7259.

FOR SALE — WA

KENWOOD TS-520 80-10m, with extr VFO in ex cond. Spare set finals, Drake low pass filter, Morse key & manuals to boot. $650. Cobra 138-XLR-A, 18ch 27 MHz also in mint cond. $170. Turner base station mic $45. Creed 7 TTY, still going with paper, hbook $40. VK6ARK, QTHR. Ph: (09) 457 2877 after 9am and weekends.

TRANSFORMER 1300V CT, 500mA plus, 6x5x4½ inch core, Wt 15kg approx. $50. Trany 1050V CT 150mA, 6.3V 5A, 5V 3A, 55V 30mA, 5x2½x4½ inch core, Wt 5kg. $20. Selsyn motors, 2 with trany $40. VK6TL, QTHR. Ph: (09) 386 7692.

FOR SALE-NT

ICOM 505 6m tcvr, SSB, CW, (FM can be fitted as an option) Mems, scan 3W port 10W fixed. Only 2 weeks old. Genuine reason for sale. $375 ONO. VK8LB QTHR. Ph: (089) 52 3005.

ANSWERS AOCP FINAL EXAM 8/82

1	c	11	c	21	a	31	d	41	d
2	d	12	d	22	d	32	d	42	d
3	c	13	a	23	b	33	a	43	c
4	c	14	b	24	a	34	c	44	b
5	b	15	c	25	b	35	b	45	d
6	d	16	c	26	c	36	b	46	a
7	b	17	d	27	a	37	a	47	a
8	c	18	b	28	b	38	c	48	c
9	b	19	d	29	c	39	c	49	b
10	d	20	c	30	b	40	a	50	b

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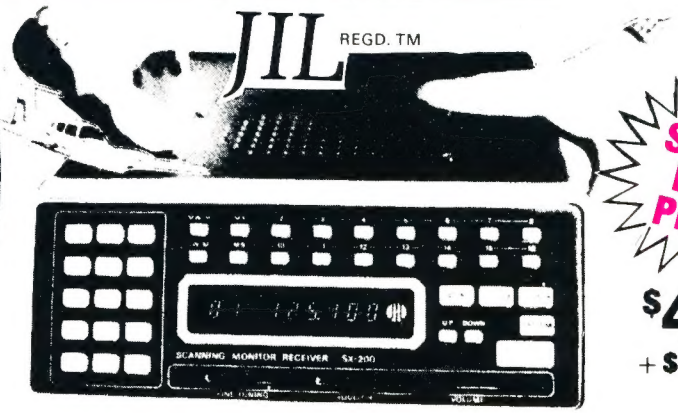

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▪ **Selectivity:**	FM More than 60 dB at −25 kHz AM More than 60 dB at −10kHz
▪ **Dimensions:**	210 (W) x 75 (H) x 235 (D) mm 8-1-4 (W) x 3-1/4 (H) x 9-1/8 (D) in.
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▪ **Seek rate:**	Fast 10 Channels/sec. Slow 5 Channels/sec.
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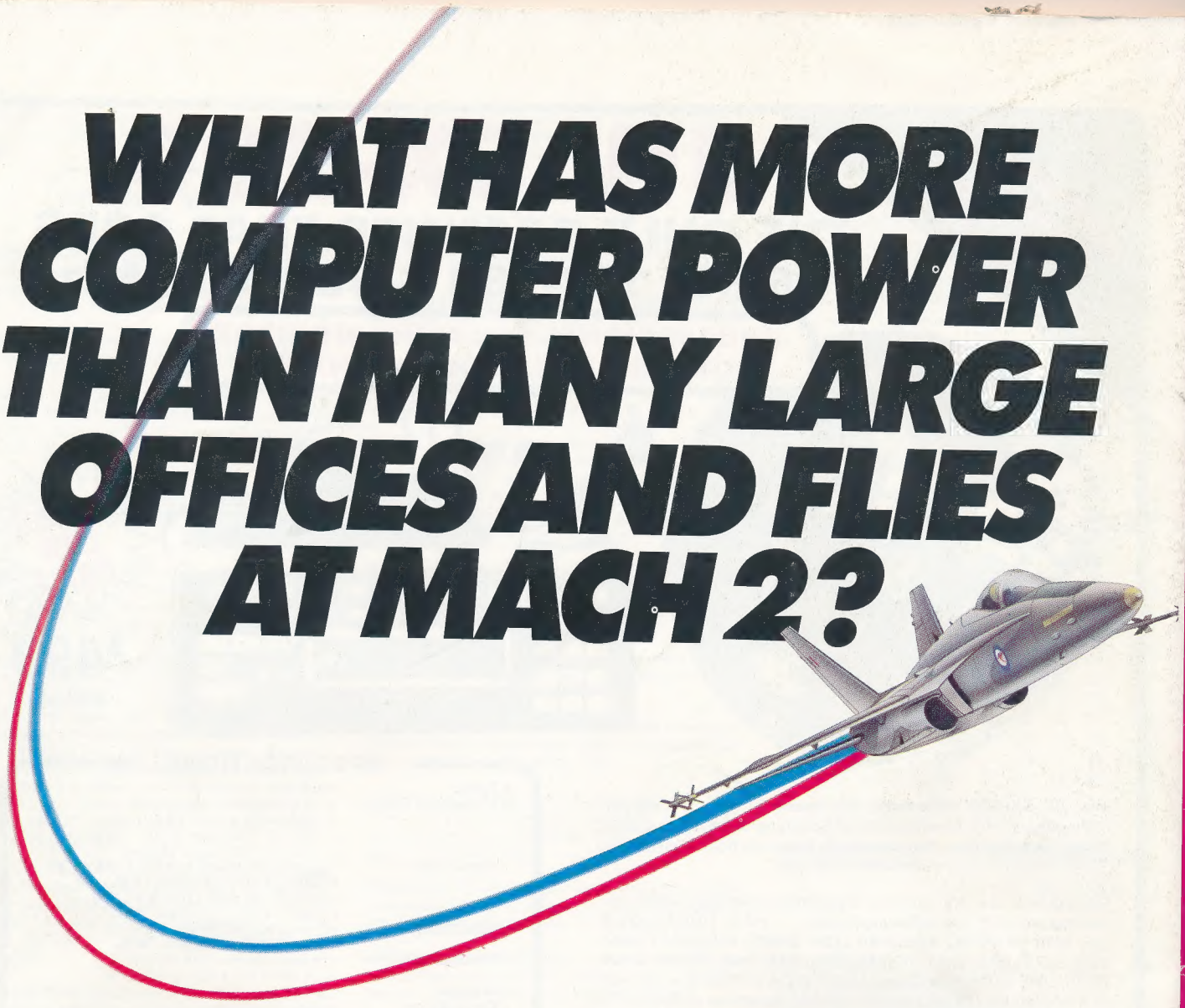

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